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Root's Goods for the West.

Bee=Keepers of the West

Should remember that we have established at Des Moines, Iowa, a **WESTERN BRANCH** where a **full** line of Bee-keepers' Supplies are kept for sale. You can save time and freight by ordering from our Western Branch. We have engaged Jos. Nysewander to take charge of this business, who will give all orders good, careful, and prompt attention. Send for his price list for '93. Address

Joseph Nysewander, Des Moines, Iowa.

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where our Bee-keepers' Supplies are kept for sale, and prompt shipment. You can save time and freight by ordering from our Eastern Branch. We have engaged Mr. F. A. Salisbury to take charge of this business, and he will treat you well. He will be pleased to send you a list of goods kept in stock.

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EASTERN BRANCH, F. A. SALISBURY, Agent, Syracuse, N. Y.

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Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue.

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Wants or Exchange Department.

Notices will be inserted under this head at one-half our usual rates. All advertisements intended for this department must not exceed five lines, and you must SAY you want your adv't in this department, or we will not be responsible for errors. You can have the notice as many lines as you please; but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices offering articles for sale, can not be inserted under this head. For such our regular rates of 20 cts. a line will be charged, and they will be put with the regular advertisements. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange one Spencer repeating rifle, value $8; also a good small printing-office complete, worth $14. What have you to offer? 24-1d
W. H. LAWS, Lavaca, Ark.

WANTED —A young man of good habits, willing to make himself useful on a farm and help in the apiary. To the right man a comfortable home and a chance for advancement is offered. 1d
CHARLES STEWART, Sammonsville, Fulton Co., N. Y.

WANTED.—To sell one six-horse boiler, upright, 26x60, 37 2-in. flues; one five-horse engine, cylinder 5x6 in., combined base; warranted all in good working order. Price $130.00 f. o. b. cars. 5d.
V. W. KEENEY, Shirland, Ill.

WANTED.—To exchange for offers, a complete outfit for making bee-hives, Root's 2 H. P. expansive engine, all in good order. Must sell. Write quick for particulars. A. B. HERMEN,
Lock Box J, Burnett's Creek, White Co., Ind.

WANTED.—To exchange berry-plants, or grape-vines, for bees, queens, honey, or offers.
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WANTED.—To exchange two new Vandervort foundation-mills, one 12 and one 6 inch, for 100 lbs. of pure beeswax. A great bargain for some one. F. M. TAINTOR, Greenfield, Mass.

WANTED.—To rent an apiary, or a position as an apiarist in California. Correspond with
CHAS. BROWN, Nicolaus, Sutter Co., Cal.

BEE-HIVES AND SUPPLIES.
Send for catalogue free. Address
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OTTUMWA BEE-HIVE FACTORY.
Bee-keepers, look to your interests. Every thing in the line of bee-supplies constantly on hand. Price list free. **GREGORY BROS. & SON,**
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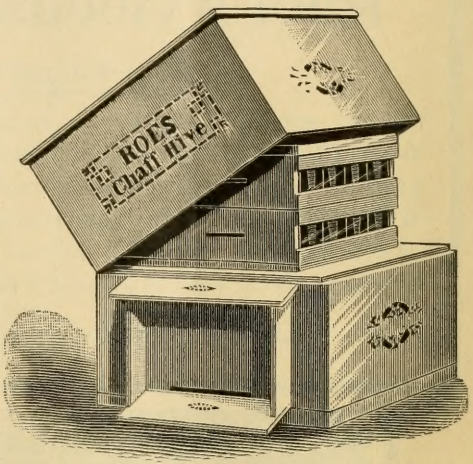
Chaff Hives.



I offer special inducements to those who will sell my chaff hive. Send for terms.
J. A. ROE, Union City, Ind.
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BEE CULTURE.
PRICE 50 CTS.
EXTRACTED
HONEY
PRICES LOW.
Send address for circular to
JAMES HEDDON,
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For Sale. A mixed lot of hives with bees, seventeen in all. Address
Miss Ann Carr, Newportville, Pa.

Berries. Friends, I can furnish you with all kinds of berry-plants at about one-half the usual price. Plants warranted. Bank references. Satisfaction guaranteed. 6tfdb
Address **EZRA G. SMITH, Manchester, N. Y.**

4 H. P. Engine 6 H. P. Boiler
For sale cheap if wanted at once.
D. S. HALL, South Cabot, Vt.

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Chicago Bee-Keepers' Supply Co.
Will furnish every thing used in the apiary, at bottom prices. Write for circular price list to
J. B. KLINE, Secy., Topeka, Kan.

HONEY COLUMN.

CITY MARKETS.

ST. LOUIS.—*Honey.*—Choice white-clover honey is rather scarce in this market. In single-tier 1-lb. sections will sell readily at 18c; good fair stock at 15@16; Spanish needle at 14@15; buckwheat at 13@14; dark and broken at 7@12, as to quality. Extracted, choice white-clover, in cans, 8@9; fair, 7; in barrels, 6½; Southern, in barrels, 5½@6.
Beeswax, firm; prime, 24½@25; burnt, or mixed with tallow, half price. W. B. WESTCOTT,
Dec. 12. St. Louis, Mo.

MINNEAPOLIS.—*Honey.*—Our market has consumed a large quantity of honey during the past week. We have paid from 17@18 for strictly fancy white; 14@16 for choice white; 13 for choice dark; 10 for common dark. Strained honey 8@9, in small quantities. Large barrels unsalable. We look to see trade considerably duller, and prices lower after the holidays. J. A. SHEA & Co.,
Dec. 19. 14 & 16 Hennepin Ave., Minneapolis, Minn.

ALBANY.—*Honey.*—There was quite a demand for comb honey during the holidays; but the market is now very quiet with prices unchanged. We quote: White clover, 14@15; mixed, 10@12; buckwheat, 10; two-pound sections, a cent less. Extracted, white, 8@9; dark, 6¾@7.
Dec. 24. CHAS. MCCULLOCH & Co.,
393-397 Broadway, Albany, N. Y.

KANSAS CITY.—*Honey.*—Demand good, supply large. White 1-lb., 17c. Extracted, 6@8.—*Beeswax.*—None on market. HAMBLIN & BEARSS.
Dec. 19. 514 Walnut St., Kansas City, Mo.

CLEVELAND.—*Honey.*—Honey-market lower; demand lighter. A No. 1, 14@14½.
Beeswax, 22@24. Demand good.
REYNOLDS & WILLIAMS,
Dec. 19. 80 & 82 Broadway, Cleveland, O.

BOSTON.—*Honey.*—Honey is selling slowly, and prices are lower; we quote: Best 1-lb. comb at 16@17. Extracted, 8@9. *Beeswax.*—None on hand.
BLAKE & RIPLEY,
Dec. 9. Boston, Mass.

ST. LOUIS.—*Honey.*—There is no material change since our last. Extracted honey is quite scarce.
Dec. 19. D. G. TUTT GRO. Co.,
St. Louis, Mo.

KANSAS CITY.—*Honey.*—There is no change to note in the honey-market since our last.
Comb, 1-lb., No. 1 white, 16@17; No. 2 white, 14@15; No. 1 amber, 14@15; No. 2 amber, 10@12; extracted white, 7@7½; amber, 6@6½.
CLEMONS-MASON COM. Co.,
Dec. 19. Kansas City, Mo.

CHICAGO.—*Honey.*—Comb honey selling slowly at 17@18c for best grades. The dark grades sell at 11@13c; good but not white, 15@16c. Extracted, without material change; sales chiefly at 7 and 8c; some poor at 6c and fancy, 9c. Now is a good time to send extracted to market.
R. A. BURNETT,
Dec. 20. 161 So. Water St., Chicago, Ill

CINCINNATI.—*Honey.*—Demand is fair for extracted honey at 6@8c on arrival. Supply fair. There is a fair demand for comb honey, with no choice honey on the market. Best white brings 14@16c in the jobbing way. *Beeswax*, demand is good at 23@25c for good to choice yellow on arrival.
CHAS. F. MUTH & SON,
Dec. 22. Cincinnati, O.

BUFFALO.—*Honey.*—Choice white-clover honey, light receipts in our market. Selling mostly at 16c, occasionally, 17c; No. 2 grade of white honey, from 13@14c; buckwheat honey, liberal supplies, selling mostly at 9@10c. BATTERSON & Co.,
Dec 21. 167, 169 Scott St., Buffalo, N. Y.

DETROIT.—*Honey.*—Comb honey selling slowly at 13@14c; extra white, 15c. Extracted, 8@8½. *Beeswax*, 25@26. M. H. HUNT,
Dec. 22. Bell Branch, Mich.

Peavine and goldenrod extracted, in 75-lb. cans at 7c. per lb. Address J. B. MURRAY, Ada, Ohio.

FOR SALE.—Three bbls. and twelve 60-lb. cans fine Spanish-needle honey. EMIL J. BAXTER,
Nauvoo, Hancock Co., Ill.

CONVENTION NOTICES.

The Indiana State Bee-keepers' Association will meet at Indianapolis, Jan 18 and 19. R. S. RUSSELL, Pres.
Zionsville, Ind.

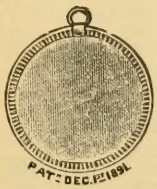
The annual meeting of the Ontario Bee-keepers' Association will be held in the town of Walkerton, Ont., Jan, 10, 11, 12, 1893. All interested are cordially invited. W. COUSE, Sec.
Streetsville, Ont.

The second annual meeting of the California State Bee-keepers' Association will be held in the Chamber of Commerce, Los Angeles, Feb. 7 and 8. Programs will soon be issued, for which address the secretary, J. H. Martin, Redlands, Cal.

The Minnesota State Bee-keepers' Convention is to be held on Thursday, Friday, and Saturday, Jan. 12, 13, 14. The by-laws have been amended so as to admit members from Western Wisconsin. W. H. PUTNAM, River Falls, Wis.

The Southwestern Wisconsin Bee-keepers' Association will hold its next annual meeting in Boscobel, Grant Co., Wis., on the 13th and 14th of January, 1893, commencing at 10 A.M. All members of the association are requested to be present, as the following officers are to be elected: President, vice-president, secretary, assistant secretary, and treasurer. Blank reports will be sent to each member of the association for 1892, with instructions. A cordial invitation is extended to all bee-keepers, and especially to those who would like to join us. Each member will be notified at least one month before said meeting. BENJ. E. RICE, Sec.
Boscobel, Wis.

AUCITE STOVE-MATS.



How much of domestic happiness is marred because the dishes prepared for dinner are scorched or burned! How annoying to have something boil over on the stove, as it is likely to do sometimes with the most vigilant watchfulness. All these troubles can be avoided by using the stove-mat shown herewith. We were somewhat skeptical about it till we tried it in our home, and now we are convinced that there is nothing that can lay a better claim to the term "a household necessity." The mat is made of asbestos, bound with sheet steel, crumpled around the edge, 9½ inches in diameter, and is indestructible. Though it is almost as soft as felt, it will not burn. You can place it directly on the blaze of a gasoline-stove, over the gas-jet, in the fireplace, or on the stove, and it will prevent burning of all kinds of food that ordinarily require stirring. No stirring is required for oatmeal, milk, rice, custards, blanc mange, jellies, butters, catsups, apple sauce, etc. In fact, nothing will burn on it. Coffee will not boil over if the pot is on the mat; bread toasts nicely on it. Try it and be convinced. For the nursery there is nothing equal to heat the milk and food for the baby. If a grate fire, lay the mat on the open fire. If the mat becomes soiled, do not wash or scrape, but turn the soiled part next to fire, and burn until clean. The mat regularly retails for 25 cts. We will furnish them at 20 cts. each; $2.00 per doz. By mail, 6 cts. each extra, or 65 cts. per dozen. We will furnish 6 doz. for $11 00, or one gross for $20.00. We have already sold over 10 gross in less than three months. We will give one free, postpaid, for a new subscription to GLEANINGS, with your own renewal and $2.00.

A. I. ROOT, Medina, Ohio.

TILE ✠ DRAINAGE.

BY W. I. CHAMBERLAIN, A. M., LL. D.,
Formerly Secretary of the Ohio State Board of Agriculture, and late President of the Iowa State Agricultural College. At present Associate Editor of the Ohio Farmer.

This is a valuable companion to our other rural books. It embraces the experience of forty years of one of our foremost practical agriculturists, who has laid with his own hands over 15 miles of tile.
Price 35c; by mail, 40c.
A. I. ROOT, MEDINA, OHIO.

Best Articles from Best Men.

With the Dec. issue the BEE-KEEPERS' REVIEW is five years old. This last number of the fifth year is unique. Its editor asked each of several of the best bee-keepers to write what he (the bee-keeper) considered *the best article he ever wrote*. Each was to go over, in his mind, the bee-keeping of the past, see how it had progressed first in this direction, then in that; met this obstacle, then that; then consider the bee-keeping of the present, its needs and necessities; and then try and give the best advice possible to give in a single article as to the course that bee-keepers ought to pursue in the future to make their pursuit more pleasant and profitable. If you wish to know in which direction the leaders in apiculture believe that bee-keepers ought to work to better their condition, send 10 cents for the Dec. REVIEW. With it will be sent the Oct. and Nov. issues. By the way, the Nov. number gives the views of such men as Doolittle, Taylor, and Miller upon that vexed question of "Sugar-Honey Production." There will also be sent a sheet upon which are printed nearly a dozen portraits of the REVIEW'S leading correspondents (among them the editor), together with a list of all the special topics that have been discussed, the numbers in which they may be found, and the prices at which they will be sent. A proposition is also made whereby these back numbers may be secured at *half price*. The price of the REVIEW is $1.00 a year. The REVIEW one year and "ADVANCED BEE CULTURE," for $1.25. New subscribers for 1893 get the last three issues of this year free.

W. Z. HUTCHINSON, Flint, Mich.

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who sends $1.00 for a year's subscription, a copy of "Newman's"

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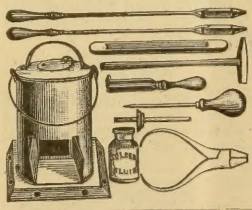

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Consists of fire-pot, soldering-irons, solder, and soldering-fluid, with tools compl'te as shown in cut, with directions for soldering different metals, and how to keep your soldering-irons in shape. Whole kit, boxed, 12 lbs. Shipped on receipt of $2.00. Agents wanted.

O. & L. OATMAN,
8-7db **Medina, Ohio.**

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Everything used in the **Apiary.** Greatest variety and **largest** stock in the West. New catalog, **54** illustrated pages, free to bee-keepers. **E. KRETCHMER, RED OAK, IOWA.**
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We guarantee it to be far superior to all others. If, on trial of from one to a dozen, you do not find them so, or if they do not prove satisfactory in every way, return them by mail within 90 days after receipt, and we will refund your money. PRICES: Each, by mail, postpaid, with full directions, 20c; per dozen, $2.25. Send for circular and testimonials. Supply-dealers, send for wholesale prices. 10tfdb **R. & E. C. PORTER, Lewistown, Ill.**

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
PUBLISHED BY A. I. ROOT
$1.00 PER YEAR MEDINA OHIO

Vol. XXI. JAN. 1, 1893. No. 1.

STRAY STRAWS

FROM DR. C. C. MILLER.

NOW IS THE TIME to melt up your old combs, when they are brittle and you can break them up fine. But be sure to soak them full of water before melting.

"BUCKELBRUT" is the name given by the Germans to drone brood in worker-cells. Being of an economical turn they use one word instead of our five.

DO YOU LIKE MILK that tastes rich? I'll tell you what to try. Put a pan of milk on an augite stove-mat on the stove, and let it boil for an hour. There's richness for you.

THAT BEE-ESCAPE of friend Hewes may prove to be a "dark horse." How would it do to punch the holes with a fluted punch, abruptly tapering instead of gradually tapering?

THE SUGAR-HONEY discussion has at least shown one thing, and that is, that bee-keepers can discuss matters about which they feel deeply and differ widely, without losing temper.

BUCKWHEAT is a very uncertain crop for honey, according to replies in *A. B. J.* Doolittle says he had a good yield this year, being the first pound of buckwheat honey in 15 years.

WHILE STANDARD SECTIONS are being somewhat discussed in this country, British bee-keepers are quite stirred up over the matter of a standard honey-bottle (honey-jar we would call it).

PLEASE, MR. EDITOR, don't let York's old man monkey with that gun so near my stray straws. He looks kind o' careless; and if the gun should go off he might burn up my whole strawstack.

THIRTY-SIX STATES, if I a rightly informed, now have laws against selling tobacco to those under 16, and in some States 18, years of age. Wouldn't it be an improvement to raise the age from 16 to 60?

CRIMSON CLOVER, or scarlet clover, has been highly praised as a forage and honey plant. J. Fremont Hickman, of Ohio Experiment Station, says in *Stockman* that it does not succeed as far north as Ohio.

SOME PEOPLE are opposed to alcoholic drinks, but think lager beer all right because it isn't an alcoholic drink. The other night I saw a half-ounce of fourth-proof alcohol distilled from an average glass of lager beer! And people drink it for the hops in it!

"A LARVA 5 DAYS OLD." Does that mean that the egg was laid 5 days ago, or does it mean that the larva hatched from the egg 5 days ago? Some use it one way and some the other, hence confusion arises. Suppose you tell us which is the better way, Mr. Editor, and then we'll all try to use it the same way.

R. C. AIKIN at the Colorado State convention figured out that, with 100 colonies, a bee-keeper might average $253.50 for his year's labor, and $462.50 with 200 colonies. "But," he says, "the average apiarist does not, will not, and can not do it. . . . None but the expert apiarist will make money out of bees."

THE *Apiculturist* says, "Honey and sugar mixed, say two pounds of sugar to one of honey, is superior in flavor and quality to clear, pure honey." For those who like sugar better than honey, wouldn't it be a still further improvement to replace that one pound of honey with another of sugar?

IN BLANKETING HORSES, a writer in the *Stockman* thinks, it is a bad plan to throw a blanket on a horse immediately on stopping, while he is wet with perspiration, for then the blanket becomes wet, and he has an icy covering; but he says, let him dry off a little before blanketing. Worth thinking about.

THE MANAGEMENT of the North American showed their good sense in having less than the usual number of topics on the Washington program. If you get the bee-keepers together there will be no trouble about topics to discuss. When two bee-keepers meet it doesn't take them two minutes to strike a "live topic."

M. BERTRAND, a prominent French authority, and the able editor of the *Revue Internationale*, thinks that there is a kind of heredity from the nurse-bees, owing to the food given to the larvæ, and on this account he thinks the raising of royal larvæ ought to be entrusted only to those colonies whose workers possess desirable traits.

THE FRENCH HORTICULTURAL monthly, "*Le Cidre et le Poire*," has an article from Paul Noel, in which he says, "The place where bees become useful in the highest degree is in the orchard. Experiments which have been made in this regard are so conclusive, that hives of bees have become the indispensable adjunct of a well-kept orchard."

HERE'S A POSTAL from Hasty: "Brother Miller, you didn't stick that straw through me in the right direction. I didn't say, 'their stores *below* them,' but 'their stores *behind* them.' You are aware that, with long and shallow frames, bees incline to store the honey at the rear of the hive, and form the first winter cluster at the front of the hive." Glad to correct. I was thinking of their climbing up, and whatever they left *behind* was *below*.

THE BICYCLE may prove a great blessing, even to us clumsy chaps that never risk our necks on them. Never was there any such interest in having good roads as now exists, and I suspect it's mainly owing to the wheel. If the roads are put in proper order for bike-riders, it will make wagons and carriages last a third longer. Success to the movement.

BALKY COLONIES that will not start work in sections are thus treated in extreme cases by Doolittle, as given in *Stockman*. Drum or shake from the combs the larger part of the bees and the queen, and put them in a box or hive; and when they commence to build comb nicely put them back where they came from, using the white combs they have just built as starters in the sections.

LANGSTROTH'S REMINISCENCES.

MORE ABOUT SLAVERY.

For reasons which will soon appear, I have always taken a deep interest in the colored race. My maternal grandmother was a large slave-holder on the Eastern Shore of Maryland. When she was a rich and fashionable widow, the converting grace of God came to her through the ministrations of the Methodists, and she joined their church, although to connect herself with them was almost to lose caste with many of her associates. She had always been a kind mistress to her servants; but under new and better influences she became increasingly solicitous for their welfare. I have often heard my mother say that she never thought of striking one of her mother's slaves, any more than our children would presume to strike one of our white domestics. But this, I believe, was rather exceptional, and children were often accustomed to strike and abuse the colored servants, almost at will. What a training for those soon to become citizens of a professedly republican country!

At that time a constant terror to the slave population was the dread of being sold and carried off to the Georgia plantations. Parties from the South traveled from plantation to plantation, until they had bought enough slaves to suit their purposes. One day some of the colored servants came running to my grandmother, to tell her that a woman who had escaped from her new owner had just come to her premises to hide herself from pursuit. In a storm of seeming anger, my grandmother drove the informants from her presence, commanding them under pain of severe punishment not to speak to her another word. The owner of the fugitive woman soon appeared, to make known his mission. In very few words my grandmother told him that she knew nothing at all of where his woman was hiding, and that, if she could have her own choice, she would have him driven at once from her place; but as the law allowed him to search for her, she could not prevent it. His search was in vain; and a week or more after his departure, the woman made her appearance. She lived as a free woman, and was always called Georgia Jane, and no one ever disturbed her. It must be remembered that, in those days, there were no telegraphs, railroads, steamboats, or even stage-coaches; and the persons who made up those gangs could seldom afford to come back to hunt for a fugitive.

My mother's grandmother had been a very worldly woman. One day word came that she had been converted. A pious old negro woman, when told of it, dropped down on her knees to thank God, and vowed that she would not rise from them again that day. Mother says she saw her walking on her knees with vessels of milk, to and from the milk-house, and doing all her work in the same way, for the rest of the day. If there was something of superstition in this, surely there was much more of the outflow of a simple heart, full of love to Jesus, and thankfulness that her old mistress had found her Savior.

Long before she died, my grandmother liberated all her slaves. She had done all that she could for their welfare; but the doctrine taught by John Wesley, that slavery was the sum of all villainies, had sunk deep into her heart, and her conscience was never at rest until she had set them free. To the men and women who were able to take care of themselves, their liberty was given without any restrictions. The younger girls were bound out until they were 18 years of age, and the younger boys until they were 21 years old. For the sick and aged a suitable provision was made for life; and my grandmother, from being a wealthy widow, had only enough for a moderate competency.

An uncle told me, that, on a visit to the old homestead, one of grandmother's former slaves said to him, "Massa Jim, you know that they always used to say, that, if a nigger was set free, he was of no account any more, but would only laze about and steal. Now, Massa Jim, do you know of any of old missis' servants, that, after they got free, went to the jail or the poor-house?" My uncle could only say, that, to the best of his recollection, none had ever done so. "Now, Massa Jim," continued the old negro, "kin you say as much for the same number of white people, that had as good or even better chances than we had?" "and I could only reply," said my uncle, "'No, Jim, I can not.'"

As my mother had a sister still living there, she occasionally visited her old Chestertown home. This house was near the steamboat landing, and her heart was often deeply pained, as she listened to the wailings of poor slaves sold away from home and friends. It was often said, by the apologists of slavery, that such separations of families were rare; but this was far from being so. As in all the border States little or no profit could be made from slave labor, the breeding of slaves for a southern market was quite common; and we all know, even if we have never read Uncle Tom's Cabin, what this implies; and, further, in the settlement of estates it often happened that families were cruelly divided. It has been said, that the colored people felt such separation for only a short time, as the cow and the calf that the butcher parts. If this were so, and slavery had trained God's creatures to be no better than the brute creation, what a terrible indictment must lie against it! It need hardly be said in how many cases this charge against such an affectionate race was the basest of calumnies.

Although the law strictly forbade the teaching of slaves to read, my dear mother, when visiting among her old friends, could never bring herself to respect it. A slave who had passed the middle age was trying to learn from her how to read. His progress was painfully slow, and he was kept in the little words of the spelling-book so long that he begged that she would teach him from the big words, further on. He could be reconciled to more lessons with little words, only when he learned that the great General George Washington had to learn the little words before he came to the big ones.

The following incident was once witnessed by my mother: A colored boy was dragging his little master in a small go-cart, when one of the wheels came off and the little boy tumbled to the ground. As soon as he could recover the

use of his feet he flew at the servant, kicking and biting him, and pulling his hair, paying no attention to his pitiful outcries, saying that he could not help the wheel from coming off.

The hated institution! If possible, its curses rested more heavily upon the whites than the blacks; and it is often difficult for me to realize that I have lived to see it overthrown.

On one of her visits to her sister, my mother was told that an old woman who had been her nurse had walked a long distance, and was waiting to see her. As soon as she caught sight of my mother, crying out, "O Miss Rebekah! O Miss Rebekah!" she folded her in her arms, and wept over her as though she had been her own child. When this scene was over, she learned that an old colored waiter, who had also walked a long distance, was waiting in the kitchen to see her. After an exchange of affectionate greetings, he said, "Miss Rebekah, don't you remember how Jim used to open oysters for you, when you were a little girl?" "Oh! yes, Jim," replied my mother; "I remember it very well." Going to a table, over which a neat napkin was spread, he lifted it off, and there stood the oysters in their shells, all ready to be opened, and the plate on which they were to be eaten. "Now, Miss Rebekah, you must please sit down at this table, just as you did when you were a little girl, and let old Jim open some oysters for you, before he dies." My mother complied with his request, but her tears fell so fast that she was able to choke only a few down.

Yes, there were masters and mistresses who did all they knew how to do for their slaves, and who, no doubt, would have set them at liberty, at any sacrifice, if they could have been made to see that this would better their condition. L. L. LANGSTROTH.

Dayton, Ohio.

Continued.

WINTERING BEES UNDER SNOW.

DOOLITTLE'S EXPERIENCE.

A correspondent writes, saying: "By setting my bees next to a fence which I have on the west side of my bee-yard I can usually have them covered with snow from one to five feet deep. Will this be a good way to winter them, and would you advise me to do this?"

This is a question which has been frequently asked in the past, and, as a rule, the answer has been, "Yes, let the snow drift over the bees if it will; for, the more snow over the hives the better." My experience has not been in accord with this, however; but I have found that, if the hives are covered two-thirds the way up the brood-chamber, it is a great advantage; but if the hives are covered two-thirds the way up the cap or cover, or completely over, it is a positive damage to the bees, and worse than no snow at all. For several winters, when I first began to keep bees I uniformly wintered them in the cellar; and, not being as successful one winter as I desired, I concluded to winter on the summer stands the next winter, and, as the snow fell, sweep it up around them. I did so; and by December 10 the hives were covered from sight, while the pyramids of snow all over the yard made a very picturesque view which was quite enchanting. At the end of a month we had a thaw, when I looked at them and found that the warmth from the bees had so thawed the snow that a small dog or a cat could easily go around between the hives and snow. I was highly elated over the apparent success, and concluded that was just the way to winter bees. I found, however, that the bees were quite restless, and, upon raising the quilt, were ready to fly out and perish on the snow, instead of being quiet, as all good bees should be. As the next day was fine they had a cleansing flight, and all appeared well. We had little snow the rest of the winter; and when the season fairly opened I found I had 29 colonies left out of 52. This loss was attributed to the severe cold during April and the fore part of May; and I believed that, if I could have had snow to cover them all winter, no loss would have occurred. One thing I noticed, however: All the hives I opened at the time of the thaw had brood in from two to three combs, while in April scarcely a bit of brood was to be found in any hive. Of course, I reasoned that, had the snow continued, brood-rearing would have been kept up, and in the spring the hives would have been teeming with thousands of young bees instead of depopulated colonies, as I then had. The next winter put an end to these visions, however, for this time we had snow to keep them covered from December to April 10. During the fore part of February there came a warm day, so the bees flew finely, and upon examination I found several hives that had brood in four or five frames; while others, that were not buried so deeply, had only a very little brood in two frames. I noticed that the bees in those hives which had the most brood were so heavily loaded with feces that they were scarcely able to fly, while those with but little brood spotted the snow but very little compared with the others. However, I figured that those having brood in about 250 square inches of comb, as some of the best had, would give fifty young bees to the inch; and it was with a look of wisdom that I told my neighbors that such a colony would hatch out 12,500 bees in twenty-one days, and that I expected a rousing colony by spring. Cold weather, with more snow, came, and held so until about the middle of March, when we again had a day that the bees could fly. The bees were all shoveled out, and I expected to see plenty of these 12,500 young bees on the wing; but upon going to these hives I was disappointed beyond measure to find all the old bees dead on the bottom-board, and those young downy bees clustered closely together where they had hatched, in the embrace of death. Not only this, but the old bees had consumed nearly all the honey in rearing these bees, so I had nearly a total loss except the combs.

When the working season arrived I found I was again reduced to 29 to start the season with. The difficulty with me seems to be that, as soon as the hives are covered with snow, the warmth of the ground, combined with the warmth of the bees, makes it so warm that the bees become uneasy, go to breeding, consume large quantities of honey, thus distending their bodies and using up their vitality, causing them to die of old age during February, March, and April, while the young bees have not the usual strength and vitality of bees hatched in September and October to withstand the rigors of winter, so spring dwindling and death are the result. I find that what is true of myself is also true with nearly or quite every bee-keeper in Central New York.

I have given the particulars in the above, as it best describes all the cases which I have known where bees were drifted under snow for any length of time. One winter I had snow ten feet deep over a part of the bees, caused by a deep snow and a peculiar wind drifting it over a knoll. I tried as far as possible to keep the front sides shoveled clear of all I could; but I completely lost track of ten colonies; and of those ten, not one was living the first of May.

From the above experience, during fifteen

years or more of the past. I advise all to go slow who are not sure that the plan of wintering bees under snow is a success with them. Try only a few at first, till you know of a certainty that you are right; and then, if your experience proves different from mine, do as you like with the whole apiary.

Borodino, N. Y., Dec. 15. G. M. DOOLITTLE.

SUGAR-SYRUP HONEY.

PROF. COOK REPLIES TO MR. DADANT AND OTHERS.

Digestion is the process whereby the food is so changed that it may pass through an animal membrane, or from the alimentary canal—the stomach and intestines—to the blood. As this process is by osmosis, we may say that digestion is rendering the food osmotic. Usually this is simply liquefying the food, though in some cases, as in blood albumen, the food is already liquid, but not osmotic, and so must be digested. I would not say that digestion is the fitting of the food for assimilation, for this is not true. Some of the digested food, as soon as it gets into the blood, is changed again to fit it for assimilation. This is true of all the peptone, or digested albuminoids. I believe no scientist will take issue with my definition of digestion. The "Century Dictionary" gives just this definition, as does Flint in the last edition of his Physiology. He says it is the change preparatory to absorption.

We eat three kinds of food that need digestion: the others are already osmotic. These are starch and cane sugar; albuminous foods, such as cheese, white of eggs, muscle, etc.; and fats.

The starch is slightly digested, or changed into glucose, by the saliva. But as this is stopped by the acid gastric juice of the stomach, it is unimportant. Yet the sugar so formed needs no further digestion, but is absorbed at once into the blood. The most of the starch, the cane sugar, and all of the fats, are digested, not in the stomach, but in the small intestines, by the pancreatic juice—a juice secreted by the pancreas, a large gland lying just back of and below the stomach—the most important organ, indeed, of digestion. Here the remaining starch and cane sugar are changed into glucose, and the fat changed into an emulsion, called chyle, which can be taken up by the lacteal vessels and carried into the blood. The albuminoids are digested, usually, by the gastric juice, which is peculiar among the digestive juices in being acid. This is all the digestion that is accomplished in the stomach. Indeed, this does not need to be done in the stomach, for, if not done here, an element of the pancreatic juice will do it. This is why a stomach is not essential to life, and why, in case of cancers and tumors, the whole stomach has been removed, and yet the person so treated recovers and is entirely sound and able-bodied. We speak of the value of a good stomach, and it is very desirable; but we see from the above that a good pancreas is much more necessary. The cane sugar is changed to glucose (physiologists say, and correctly, too, digested), in the intestines, by the pancreatic juice. Flint says, last edition of Physiology, page 171, "All the sugar of the food is converted into glucose before it is taken into the blood." He says, page 248, that the pancreatic juice digests or transforms cane sugar into glucose. This is just what the bees do for us in case we eat honey instead of cane sugar. Yet I do not think this glucose is identical with that made in the starch-factories. The chemist detects no difference, but the physiologist does. In such matters the physiologist is much better authority than the chemist. His reagents are more sensitive. Every intelligent bee-keeper is physiologist enough to refute the ablest chemist in this matter. So long as our bees refuse commercial glucose until forced to take it, and so long as it is fed with fatal effects for winter use, so long is the argument with the bee-keeper-physiologist.

A word as to chyme and chyle. The first word refers to the material in the stomach, which, as we see, is of a varied nature. It consists of the albuminoids more or less digested, and the starch, except the very small amount digested in the mouth by saliva, the fat, and cane sugar. Of course, the word is no longer of any use in human physiology, and we do not find it at all in many physiologies. It is a good term for the food of bee-larvæ. Chyle is used to designate the digested fats, which are taken up by the lacteals.

I have always enjoyed reading Mr. Dadant's articles, even though controversial, as they are candid and cautious. I was surprised, however, at his representation of *my views* in GLEANINGS, Nov. 15, p. 833. I should not have recognized them at all. He says, "Prof. Cook can boast of being the first who wrote that the more or less complete change of food by its mixture with gastric juice is digestion." I must differ, as I never said or wrote any such thing. From what I have said above, it will be seen that any such assertion would be absurd. I am very sorry that my friend has any such impression, and I can not see how he got it. If I have written so carelessly as to give any such impression, I beg pardon, and will be grateful to be referred to the article. Mr. Dadant says, "Of course, no savant will say that starch is digested before going into the stomach." I beg pardon; but I think that every physiologist will say that some starch is digested in the mouth. Mr. Dadant is surely alone in this view. Every word that Mr. Dadant quotes in his article from scientists can not hit me very hard, for it is all true, and I accept all of it.

I do say that honey is digested nectar, and I certainly believe that every physiologist — I should not go to a chemist, as this is not in his line—will sustain me, whether he be American or European. They say that cane sugar eaten by us is digested or transformed by the pancreatic juice. They say the bees do the same thing, and Mr. Dadant knows it. I feed 23 lbs. of cane sugar at night, and extract it the next morning, and there is eight per cent of cane sugar and 67 per cent of glucose. Now, friend Dadant, you know that the secretion of the bees transformed this. If you prefer, say transformed. All physiologists call it digestion, whether in America or France. It is digestion, and why not say so? And, friend Root, Cowan does agree with me exactly. On page 7 of his excellent book he says: "The nectar which was gathered from the flowers has been converted into honey by a secretion derived from the salivary glands." Page 119, he says: "The production of a secretion to assist *digestion* to convert the cane sugar of nectar into the grape sugar of honey." And he quotes Planta, who is surely a savant, to the same purport. Cheshire, vol. I., pp. 100 and 263, gives exactly the same explanation. So you see, friend Root, both Cowan and Cheshire—yes, and Planta—yes, *et al.*, I am sure, of scientists, teach this, for it is the truth in the matter. Two things I like very much: First, to be right; and, second, to have the support and sympathy of my friends. In this matter of sugar-syrup honey I candidly believe I am right. I wish I had the support of my friends, for I like all of my friends to be on the side of the truth.

These are facts: Honey is the stored liquid product of bees; and, as shown above, this is usually digested cane sugar. In case bees feed on glucose or honey-dew, which is, very likely, glucose, and so needs no digestion, then it would be stored without transformation or digestion. The nectar, which honey comes from, is very varied. It is usually nectar from plants, mostly from flowers; it may be from sap of stubble or maple-trees; then it is cane sugar, just what we feed in feeding cane-sugar syrup; it may be from fungi, as ergot; it quite often is from honey dew, and may be in such cases excellent, or rank and bitter. Thus no man can ever certify that his honey is pure floral honey. In very many cases this would be false.

Honey from cane-sugar syrup, then, is honey. No other position, it seems to me, is possible, else we never know that we have any pure honey. Floral honey is digested nectar plus a trace of formic acid, and possibly other elements from the digested liquid, plus a slight trace of organic element from the flower which gives the peculiar flavor of each kind of honey. This is very slight and mild in clover honey; pronounced in basswood, and sharp and pungent in buckwheat. It is not always desirable. We should be glad to miss it in buckwheat honey. Honey from cane-sugar syrup is the same as the above, except that the last element is wanting. I have shown that this is honey. I had three excellent chemists analyze it, and they could not distinguish it from the best clover and basswood honey. Forty of my students tested it and pronounced it honey of excellent quality. Two of our ablest Michigan bee-keepers, Messrs. James Heddon and T. F. Bingham, pronounced it honey, at our association last week, and honey that is reputed first-class. Read my article, friend Root, and you will see that I did not say that they could not distinguish it from linden honey, though Mr. Heddon pronounced it just that. The chemist could not do that, for the aromatic flower element, even in basswood, is very slight in quantity. We see, then, that it is good; it pleases the palate; it will sell. People will not object to it, for they will have no reason to object. Again, it is wholesome. We feed it to bees, and they like it, and often thrive better on it for winter food than on other honey. Some honey from flowers is not wholesome for people or bees. So we may safely say that this is better—more wholesome—than some floral honey.

You say, friend Root, that we add honey to *cane-sugar syrup* to prevent granulation. Certainly we add it to cane-sugar syrup, not cane-syrup honey. Cane syrup does crystallize very readily; but cane-syrup honey does not. There is some before me, side by side with basswood honey. They have been together all winter. The basswood is wholly candied, but the other would run out of the bottle. Your experience is not mine. Cane-sugar syrup is changed to honey, and does not readily granulate, while the syrup does crystallize quickly, and so we add acid or honey to prevent it, else our feeders are crusted over with the crystals, and our bees often suffer seriously by being stuck up or coated with the sugar crystals.

But why produce sugar-syrup honey? and why say any thing about it? First, we have found that we can not always produce any other. Such has been practically the case in Michigan for the last three years. Now, if the bee-keeper can secure honey—good honey—despite the season, is it not good to know it? Surely it is, if it can be done at a profit. The experiments here and in Mr. Hutchinson's apiary the past year seem to prove that it can be, by the expert apiarist. I believe I can produce fine comb honey in this way at a good profit. To my mind, the objections are not valid ones. The arguments for—bread and butter for our loved ones—are *blessed ones*.

"But," says one, "it will simply make honey cheaper, and so be really no advantage." Cheap honey means honey for everybody. Isn't that a pleasant thought? Again, cheap articles sell where expensive ones hang to the owner. Cheap articles are far more ready to become staples. These two aids appeal with the fact of certainty to my ideas of right and blessing. Granting that honey *is* cheapened, it will not come at once; and in the mean time all who can produce this honey profitably will reap a double benefit.

Again, to feed at a profit requires skill, and will make better bee-keepers, and will reward hard study and effort. Now, friend Root, let us throw aside visionary troubles, our "doubts and fears," and all work for what the truth and fact urges as our right and privilege.

I have no doubt that sugar syrup honey will be produced largely next year. If it is genuinely good, as I fully believe, and feel sure it will prove, then I have no fear of a market. If it can be produced at a profit, then it will be produced. No one will be wronged, but I believe our whole fraternity will be helped. I know of no class whom I should like to see prosper, with more sincere satisfaction. A. J. COOK.

Agricultural College, Mich., Dec. 10.

[The following is the article that appeared in the *Bee-keepers' Review*, and which, at the request of Prof. Cook, we publish:]

WHAT IS HONEY? SOMETHING IN DEFENSE OF SUGAR HONEY.

It is not always that our dictionaries are to be relied upon to tell us the truth. This is illustrated by our latest, and, so far as I know, our best, the Century. In it honey is defined as "the sweet substance of flowers, gathered by the bees." It takes but very little investigation to actually prove that this is an error. It seems to me that the best definition we can possibly give is this: Honey is digested nectar. Every one understands that honey is the liquid product of bees which they store in the cells of their comb. This substance has been known from time immemorial as honey. The merest child and the unlettered rustic, as well as the scholar, agree to this last statement. It is a truism too evident for contradiction, too generally recognized to require any argument.

The other definition, that honey is digested nectar, is just as true, though not as evident to the unlearned. The definition offends the tastes and sensitive notions of many good people, and especially bee-keepers, who dread to see any—even an imaginary—stigma cast upon their pets or the product of the apiary. Let me urge that any such statement, if truth, need disquiet no one. We all should desire the truth—should willingly dig for it, scatter it when found, and defend it at all hazards, especially so if we have to do with nature's secrets, for these are God's own truths. But why should any one be offended at this definition? We all know that honey is carried in the honey-stomach and emptied from it into the cells of the comb. I think it must come from a wrong notion of digestion. Digestion is simply changing our food so that it can be absorbed. It may be simply liquefaction, though many substances, like blood-albumen, the albuminous material of milk, and cane sugar, may be in solution or in a liquid state, and yet must be changed—digested—before absorption can take place. These substances can not pass rapidly—possibly not at all, from the stomach through to the blood, except that they are digested. Digestion makes them no less clean, no less wholesome, no less nutritious. It simply makes them available, practically useful. Held in the stomach, they would be heavy indeed. Changed by the digestive ferments, they pass rapidly and easily into the blood, and hasten on to nourish the tissues. If we eat cane sugar, we have to digest it; if we eat honey, it has already been digested. Therefore it may be true, as some physicians have argued, that honey is a safer food for those with weak and delicate stomachs than is our

common cane sugar. We know that certain diseases, like diabetes and Bright's disease, are now more common than of old, and we also know that no revolution in food regimen has been so marked and startling as that from honey to cane sugar. We eat the latter *in extenso*, and have to do what the bees did for our away-back ancestors, who ate few sweets other than honey. Thus no one need or should object to the assertion that honey is digested nectar. First, because it is truth; and, secondly, because this very digestion is in every way wholesome and desirable.

The nectar from which honey comes is very various in its origin, and doubtless quite varied in its nature. Bees get the nectar from flowers, from sap, from fungi, from fruit, and from various insects. While bees get the most of their nectar from flowers, they often get not a little from extra floral glands, as in the case of the cotton, the cow and partridge peas. Maple and other saps furnish not a little nectar, and so are far more culpable than our good friend Hasty, for they gave the bees pure cane sugar years ago, while Hasty only suggested it in this year of our Lord 1891. The sap from stubble often yields very abundant nectar, as do such fungi as ergot, and the bees have no scruples against it, for they gather, digest, and store it, and it is honey. The secretions from insects are treated in the same way. In some cases the resultant honey is dark, rank, and unfit for table use; but in other cases it is delicious, and could not be told by the chemist, nor even by the connoisseur, from even the best of honey from nectar of our best reputed blossoms. Now, if only that is honey which is derived from the nectar of flowers, what shall we call all the other? Indeed, the most of our honey is composite in make-up and in origin. Very much of that which is transformed flower-nectar is largely mixed with that of many different sources. Not infrequently the bees visit groceries, cane-syrup factories, and the maple-bush, and thus appropriate cane sugar unmixed. It is impossible, even if desirable, to secure any honey that we can insure entirely from flowers.

It follows from the above, that any artificial admixture of glucose or other syrup with honey makes it a compound that is not honey. It is a mixture of honey and syrup, and is in part a substance that has not been digested by the bees. It is an adulteration.

From the above, it would follow that honey secured by feeding any nectar is still honey. Is there any avoiding this conclusion? If we feed honey, no one would question the fact that the resultant product is honey. But the bees may have secured the nectar of this same honey from maple sap, from fruit, from the sorghum-factory, or elsewhere. It is nectar digested, or transformed, by the bees, and so it is honey. It may be very undesirable honey, but still it is honey.

Suppose, then, that glucose or cane syrup is fed: I think we must pronounce the resultant product honey. It is digested nectar. But this does not say that it is good or even marketable honey. I am very certain that honey from commercial glucose would not be good. The bees do not like it, will refuse it if any other nectar is at command; will die if fed it exclusively and continuously. If mixed with honey it is easily detected by the chemist, and so any such adulteration can be detected, punished, and so prevented. If fed to bees, I doubt if it could be made a success; and as all such production would be confined to bee-keepers, it would cease, as it would not be to the honey-producer's interest to create an unworthy product and injure his own business. Such honey would be palpably unwholesome; and as I believe it could be detected, it would be possible to prevent its production, should this be necessary. Honey, then, from feeding glucose would still be honey, but it would be inferior, unwholesome, and so its production could be and should be prevented. As it could probably be detected, it could be prevented, should such a course be necessary, which, from the nature of the case, is not probable.

Honey from feeding cane sugar is quite another thing. It is honey, and, so far as we yet know,—indeed, there is no reason to think otherwise,—it is entirely wholesome. It is exactly like the honey from flowers, except it lacks some of the aromatic flavoring substances, which exist in very minute quantities. If fed slowly it would be well reduced by the bees, and I believe few would pronounce it even an inferior honey. Mr. Larrabee fed our bees twenty-three pounds of honey in one night last June. This was extracted the next day, and my students—a large class—all pronounced it undoubtedly honey, and of excellent quality. A lady of my household—the best *Cook* I ever had—upon being told what it was, said it had the real honey flavor unmistakably, but was mild and pleasant. It is interesting that the chemists analyzed this and classed it with samples of clover and basswood honey of most superior quality.

Yet the honey was rapidly stored, and would certainly have been more like most honey from flower nectar had it been stored in five days instead of one.

If, then, honey from this source is entirely wholesome, of which there can be no doubt; if it is so excellent that forty persons engaged in the study of honey pronounce it honey, and excellent in quality, and if our best chemists class it with the best of honey from the choicest honey-plants, does it not stand to reason that it can be, may be, and, shall we say, ought to be, a product with no tarnished fame or reputation? If, upon further investigation, it proves to be insipid and inferior, then it will be for the interest of bee-keepers, the only ones who can produce it, to see to it that no such article is produced and put into the market. If, as some of our best bee-keepers believe, it is superior as a food for bees, may we not, from parity of reason, conclude that it ranks high as a table commodity?

Mr. Larrabee finds that he can dilute extracted honey with 12 per cent of water, and feed it with a slight profit with foundation in the sections, and at a greater profit if he uses partially filled sections. He estimates the extracted honey at eight cents per pound, and the comb at fourteen cents per pound. If the points made above are well taken, then the profit from feeding cane syrup, with granulated sugar at five cents per pound, would be considerably increased. I do not wonder that, in these trying seasons, Mr. Hasty's mind turned in this direction. Surely this is a matter that may well be discussed. Let us not cry knavery or fraud, from imagined dangers, but candidly investigate the matter; and if this course does offer a right and justifiable means to increase our profits, let us adopt it. If, by experience or argument, we can find any valid objection to it, then let it, with all adulteration and with glucose honey, be condemned, forbidden, and the practice of producing it prevented.

[I have little to say by way of reply to the above. If anybody besides Prof. Cook himself had told me that he (Prof. C.) wrote the last paragraph (on p. 11), I shouldn't have believed it. As it is, I am afraid our old friend will have to stand alone in his new departure; at least, I sincerely hope there is not another bee-keeper in the United States who will stand by him when he countenances or indorses the idea of putting on the market, in a wholesale way, as honey, an article that has been produced by feeding bees *sugar*. No one at the convention at Washington indorsed it in the least; and both Prof. Wiley and Prof. Riley expressed themselves emphatically, that cane sugar fed to bees would *not* make *honey*. Providing all Prof. Cook says is true, bee-keepers would have to buy sugar to feed their bees while they were getting a honey-crop; whereas, by the usual way the material of which honey is made costs us nothing; and my experience is, that bees will gather more pounds in the natural way than they will take from a feeder—at least, I have never been able to make a colony take as many pounds from a feeder as the same colony would gather from natural stores during the height of the honey season. Now, does Professor Cook really mean to say that 100 lbs. of *sugar syrup* fed to the bees at night will be found 67 per cent *glucose* next morning?

Prof. Wiley denied emphatically, before the whole convention (in answer to a question put by myself), that the bees could convert cane sugar into glucose, by taking it from a feeder and depositing it in the combs. He did say, however, that some recent experiments seemed to show that a large per cent of the cane sugar might be changed to *invert* sugar; and when I asked him whether invert sugar was the same

as glucose, he said, "Oh, no! they are quite different;" and, furthermore, that the change to *invert* sugar did not make honey. All bee-men are familiar with the fact that cane sugar forms *crystals*, while honey only *candies*, and this alone would distinguish the two.

Look here, old friend. Do you remember when you and others went for me so vehemently just because I recommended using grape sugar to start brood-rearing? And you even got good father Langstroth to assist in laboring with me, because the *appearance* of the thing might endanger our whole industry; and out of respect to my many good kind friends I dropped the matter, on the principle that, "If meat maketh my brother to offend, I will eat no meat," etc. Which will damage the reputation of our industry more—what I proposed then, or sentiments in the lines of your last paragraph on page 11?] A. I. R.

RAMBLE 75.

BEET-ROOT SUGAR-FACTORY; SOWING THE WIND AND REAPING THE WHIRLWIND.

Not many months ago the Rambler found himself with a roistering crowd of eleven carloads of adult people on the way to Ontario and Chino (*Cheeno*). This was a local political demonstration; and Ontario, where most of the crowd stopped, was surprised at the size of the turnout. Of all the countries for a good-natured, happy feeling and peaceable crowd, South California takes the lead; and one reason for it is the absence of the shillalah element.

HORSE-CARS IN ONTARIO.

Ontario is a thriving fruit-growing town, almost in the shadow of the Sierra Madre Mountains; and, as the name signifies, it is named from the province Ontario, Canada, and a good share of the people are from that wintry country. The traveler can see but few residences; but by a little looking for them they are found embowered in luxurious growths of orange, pepper, ornamental trees and roses, while now and then a well-kept hedge adds variety to the surroundings. As Magnolia Avenue is the boast of Riverside, so Euclid Avenue is the pride of Ontario, and continues seven miles directly up against the base of the San Antonio Mountain. From Ontario the avenue follows a stiff incline, and the two mules that propel the car have a steady hard pull up; but from the way they wag their long ears it is fun they enjoy going down. They are mounted on a special low truck at the rear of the car, and ride down with the rest of the donkeys that are in the car ahead, while gravity is the propelling force.

Altogether, Ontario is a quiet, delightful town; and if some of those Canadians who have written to the Rambler about coming to California *must* come, let them give Ontario a trial. They will find a friendly and enterprising people; and though they do not believe in annexing Canada to Uncle Sam's ranch, Canadians

are annexing themselves by the thousand every year.

A great impetus to the prosperity of this locality was the building of one of the (if not *the*) largest beet-sugar factories in the country. The Chino ranch, of about 50,000 acres in the immediate vicinity of Ontario, is admirably adapted to the cultivation of the sugar beet. Much of the land is termed moist, for water can be obtained by digging a few feet, and the expense of irrigation is dispensed with. In the season just past, 4000 acres were planted to beets, and the average yield is 25 tons to the acre, and the value is according to the percentage of sugar the beets will yield per ton, which is about 15 per cent, making the beets worth $4.27 per ton. The amount of sugar made during the season just closed is 8,000,000 lbs. The greatest product in one single day during the height of the season was 88 tons of sugar, which gives some idea of the capacity of the factory; and, though made on a grand scale, and able to chew up and di-

gest an immense amount of vegetables, still this factory would be inadequate to work up all the beets that can be raised here, and no

doubt others will be built soon. The steam-plow is now turning over the soil of 5000 acres for planting during the coming year, besides another 2000 for barley. The factory gives employment to 300 men; and during the season of work, all is activity; but at other times there is but little to attract the visitor.

The only honey-plant I noticed was a vigorous growth of wild sunflower which crowded almost into the streets of Chino. Bees are, however, not wanted here, and would probably interfere with the operations of the factory, for I noticed much sweetness in the form of syrup exposed, and the honey-bee would be an unmixed evil. But with Messrs. Hutchinson's and Cook's ideas in mind I have been figuring how to turn the product of this factory into comb honey. I think 10,000 colonies of bees could do it by working night and day for eight months. Different grades of honey could be made by taking the syrup in different stages and running it directly to the hives. We could thus produce pure Cuba honey, or honey from the hills of Palestine, or any other grade. If sugar-mills make pure honey, as stated by Prof. Cook, of course it will make pure orange-blossom honey, or any thing desired. I, however, have but little faith in the experiments so far; and before planting 10,000 colonies of bees around the factory I wish to have further experiments tried. No, I wouldn't give a straw for Mr. Hutchinson's experiments; and now that the agitation is on, why can not this matter be tested and settled, so that it will stay settled? Let an apiary of 25 or 50 colonies be set aside for the sole purpose of feeding; let the feeding last for several months, and the amount fed be several tons of sugar. We can take one colony of bees during a good season, and make it do wonders; but to make the whole apiary do the same is all out of the question with our present knowledge of bee culture. It is the same with this experiment of Mr. Hutchinson. It is on too small a scale to have practical results. When we compare the sugar product of the whole country with the honey product, into what insignificant proportions the latter dwindles! And even the product of this one sugar-factory is nearly equal to the entire product of California honey in a good season, and beyond it in the season just past. The many uses to which sugar can be put and sold; its cheapness, and the very limited use of honey, and its higher price, will always make the one a staple and the other largely a fancy article; and ideas to the contrary, and for making honey a great staple, are only the theories of an idle dreamer.

Another obstacle to honey becoming a great staple is the uncertainty of the yield and the impossibility of estimating the amount of product for the coming season, while the sugar-factory is so certain of its product as to be able to make contracts a year or two ahead. Now, to resort to feeding sugar to splice out our poor seasons with a makeshift honey is a grand step toward the degradation of our product.

The public demand that their butter shall be made from pure cows' milk; and oleomargarine, which has all the marks of pure butter, but which degrades and unsettles the pure product, is restricted by law. In like manner the public demand that their beautiful comb honey shall be gathered from the flowers of the field; bee-keepers themselves, witnessing the degradation of their extracted product by the introduction of glucose, also demand laws for the restriction of this fraud. Can we not also say that the feeding of sugar for making comb honey degrades the natural product, and is just as much

of a fraud as glucose in extracted honey? and if we ever have a law enacted, should not the restriction include both glucose and sugar?

The Rambler is not disposed to be a "calamity howler," and will not predict dire results in the future; but he believes that our energies should be bent toward securing the law first, then apply the screws, even if they squeeze some of our best friends; and let our motto be, "Pure honey from nature's laboratory, the virgin flowers;" and let adulterations, under whatever specious form, suffer.

In relation to the part our friend Hutchinson has taken in the sugar question, I think things were very quiet in Michigan; and, after surveying the horizon, he proposes to Prof. Cook that they go forth and sow that they may reap. Prof. Cook seemed to agree with the proposition, and forth they proudly marched, sowing sugar, or, shall we say, wind? But there speedily arose a whirlwind for their reaping. I trust our friends will come out safe, but it now looks very doubtful to the RAMBLER.

[When those sugar-hurricane drawings came to hand, we were a little uncertain what to do, because they seemed to so utterly vanquish (in imagination) our two good friends, Prof. Cook and W. Z. Hutchinson. But the more we reflected upon it, the more we thought there was a little fun that might be indulged in; and as we bee-keepers have a sort of family feeling, we can tolerate little jokes at the others' expense. Rambler has cartooned nearly the whole of us; and as nobody has as yet taken very seriously to heart any of the caricatures, we concluded to let the drawings go. Allow us to say, in all seriousness, what we have said, and repeat again, that neither Prof. Cook nor Mr. Hutchinson would for a moment recommend any course of procedure which they had the remotest idea would bring disaster to the bee-keeping industry. No disaster has so far come, except in imagination, and we hope never will. We believe the advocacy of the sugar-honey matter in the first place was unwise, and therefore opposed it with all our might; and while we did so, we do not now wish to ridicule the course of two of our personal friends, which we still think is ill advised.]

MANUM IN THE APIARY.

POOR SEASONS; MANUM'S NEW METHOD OF PREVENTING INCREASE; A SMOKER FUEL THAT WILL CONQUER.

"Good-morning, Charles."

"Good-morning, Manum. I thought that, inasmuch as the weather is somewhat threatening this morning, I would not hurry about going to my bees; so I have called to have a chat with you. Why is it, do you think, that basswood has failed to secrete honey this year? It blossomed quite full, and the blossoms looked fresh and nice; but my bees have not gathered a pound of basswood honey."

"Well, Charles, my experience is the same as yours regarding basswood, and I can not explain why it did not secrete honey this year unless Prof. Hick's theory of Saturn's influence on our earth is correct, and that its present equinox is having its effect by so affecting our atmosphere that the secretion of honey is greatly retarded or wholly checked. If his theory is correct, and Saturn does have the influence over our globe that he claims it does, I think we can safely attribute our failure to secure good crops of honey the past few years to that encircled planet. But let us take courage. Charles, for the crisis of Saturn's equinox is past; and the great rings by which he is encircled are slowly and surely turning from us; and the electric current that has been thrown at us for a few years is now growing less forcible, and our atmosphere is becoming less positive; and, as a passive condition is more conducive to the secretion of honey, we may take courage; and, moreover, as it will be 14 years before old Saturn's rings will again look us squarely in the face, and baptize us anew by showering us with his overabundance of electricity, we may, during that interval, be able to secure some good crops of honey, as of old. Let us watch and see."

"Ha! ha! ha! Well, well, Manum! I am afraid you are getting cranky. But do you really believe that theory?"

"Well, Charles, I know so little that I have to depend upon others to inform me of what there is in nature. If the theory *is* correct as to the influence Saturn's equinox has upon the earth, and knowing, as we do, that, during said equinox, we have had very poor honey seasons, I think the theory is worthy of some consideration. Who can prove the theory incorrect? As regards basswood, it is a very uncertain honey-plant. Some seasons it secretes abundantly, while at other times it secretes but little, or none at all. Usually it blooms every other year; that is, we expect one-half or two-thirds of the trees to bloom each alternate year, and once in four years we expect all to bloom, and those seasons are when we usually get our large crops of honey, if the weather is favorable for its secretion, and for the bees to gather it. But it sometimes happens that either the weather is unfavorable or the blossoms blast, from some cause or other, and no honey comes from that source. In 1885 basswood blossomed profusely and secreted well; and the weather being favorable during its time of blooming, we secured a large crop of honey, as you doubtless remember. My crop that season was 22 tons from 460 colonies. But I have not had a good crop since. In 1887, basswood blossomed again, but only about half did so; and, again, in 1889 all bloomed; but the weather being so unfavorable at the time, we got no honey from it of any account. In 1891 about two-thirds blossomed, and a partial crop was gathered; and next season (1893) is the year that *all* the trees are to blossom. But as one-half or more blossomed this year (1892), though no honey came from it, I am afraid the profuse blooming season may be passed over to 1894. However, I have known it to blossom three years in succession, and two of these seasons gave good crops of honey from that source; consequently I am in hopes basswood will do its level best for us next year."

"I believe, Manum, you told me a few days ago, that, when I called again, you would tell me something about your new method of preventing increase. I should like to have you explain it, if you can spare the time."

"Certainly, Charles; I will try to do so. But, really, I do not know whether the method is new or old. But it is certainly new to me; and right here I have 12 colonies that I have treated by the new method this season. These were run on the non-swarming plan. I will first explain how I managed these, and then I will tell you how the same method is applied where bees are allowed to swarm, and where increase is not desired. First, about the middle of May I removed the queens from these 12 colonies, to fill orders for breeding queens. These were among my best colonies that had been fed for some time, to induce brood-rearing. These colonies were allowed to rear young queens. By the time these young queens commenced laying, there was indication of swarming in many of

my other colonies; and as the brood had all hatched in those colonies where the queens had been removed, I exchanged their empty combs for combs filled with brood, from those colonies that were preparing to swarm. I was careful to take only such combs as contained uncapped or very young capped brood, and in its place I put in the empty combs taken from the hives where the queen was removed, and to these I gave the brood. The old (or hatching) brood was left with the old queen, inasmuch as the hatching of the brood gave her more room in which to deposit eggs, and as this exchange was made at the commencement of the honey-flow (the old queen having plenty of room), swarming was prevented—at least, they showed no further disposition to swarm. Now, as young queens very rarely swarm the first season, it is quite safe to rely upon their not swarming; at least, none of these twelve offered to swarm."

"Manum, do you like this plan better than to remove *all* the queens, as you have heretofore done?"

"In one respect I do, Charles, because, when I have gone through the operation, the work is done for the season, while by removing all the queens we have, first, to hunt out the queen, then cut out all the queen-cells twice; then the virgin must be introduced, queens reared for the purpose, etc. I have practiced this plan on a small scale three or four years; so far it has worked well. Now, where bees are allowed to swarm, the queens from half the colonies may be removed, as in the case of my twelve colonies I have just told you about, except that they are not allowed to rear queens. They are kept queenless for the reception of any swarm we may wish to hive with them, as those that were permitted to retain their queens will, in due time, swarm out when about two-thirds of the swarm is hived in with one of those colonies whose queen has been removed, and the other third returned to where they came from and there allowed to rear a queen; or the hives may be changed from one stand to the other while the swarm is in the air. This method, however, is not new, as it has been practiced by others."

"I should not like the last-mentioned plan, on account of our large hives—they are too heavy to handle. What is it you are burning in your smoker, that smells so strong?"

"It is particles of propolis sprinkled over the fuel in the smoker-barrel. Mr. J. E. Crane told me of this when he was here a few days ago; and I tell you, Charles, it is worth knowing. I never tried any thing that would just *drive* the bees out of the way as nicely as this will. I think it would be a good plan to melt up a lot of propolis and dip pieces of wood into it, and keep them handy by, to be used whenever the bees are troublesome, for it will quiet them in a moment."

"Have you seen his new smoker?"

"No. I have not; but, judging from his description of it, I think he is ahead on smokers. I hope it is all he claims it to be."

Bristol, Vt., Dec., 1892. A. E. MANUM.

[We do not take much stock in Saturn's influence through the agency of electricity affecting our honey seasons for good or ill; but we do take some stock in Manum's latest method for preventing increase. Whether it is new or not matters little, and we hope bee-keepers will try it another season. The Crane smoker is an excellent one—the best, in our opinion, ever constructed. Whether it can be made as cheaply as other smokers, remains to be proven. We think it can.]

BIOGRAPHY OF LITTLE MISS LEAH ATCHLEY.

A SIX-YEAR-OLD BEE-KEEPER.

The subject of this sketch was born at Lampasas, Texas, Dec. 10, 1886. The first thing she learned to say was "Bees," and point to the hive—this at the age of ten months. She has been trained in the apiary from two years old up to the present time, and this season she has been a great help in the bee-yard. She can graft queens, and rear them herself, after the Doolittle plan, and has had eight out of ten cells accepted, of her own dipping and grafting. She weighs 31 lbs., and is keen, active, and very quick to learn, and has managed her own

MISS LEAH ATCHLEY.

little apiary of six nucleus colonies this year; and when her brother Willie would take a queen from her hives without her knowledge she soon found it out and raised a row about it. Being asked by a visitor one day how she could tell when Willie had taken one of her queens she quickly replied, "I know by looking in my hive and not finding her, and by my bees starting queen-cells," and she never was satisfied, either, till she was paid a nickel.

When doubling-up time came this fall, Willie had doubled her colonies before she knew it. She soon found it out, however, and asked what had become of her bees. Willie told her that he had doubled them up for winter. She walk-

ed up to him very much irritated about it, and said, "Youngster, you let my bees alone or I will double you up. When my bees need attention I will attend to them." She can find and cage queens as quick as any one in the yard, and takes great delight in working with her bees. When no one else is in the apiary she is often seen examining her bees, with smoker (a "Little Wonder" Bingham) in hand; and she has not yet run across a colony of bees that she can not master, for she goes at them exactly right.

This very young bee-keeper will be given her bees in the spring (about 10 colonies) to run her own way, unaided by any one to see what she will do, and her work will be reported next fall.

Floyd, Tex. MRS. JENNIE ATCHLEY.

HOW MANY BEE-LOADS TO THE POUND OF HONEY?

CORRESPONDENTS OF THE BRITISH BEE-JOURNAL STIR UP AN INTERESTING DISCUSSION.

It seems that the following paragraph—a newspaper cutting—quite inadvertently found its way into the columns of our esteemed cotemporary, the *British Bee Journal* for Nov. 24th. As it started an interesting and valuable discussion, we reproduce it here for the benefit of what follows later.

WONDERFUL WORK OF BEES.

Bees must, in order to collect a pound of clover honey, deprive 62,000 clover-blossoms of their nectar. To do this, 62,000 flowers must be visited by an aggregate of 3,750,000 bees. Or, in other words, to collect his pound of honey one bee must make 3,750,000 trips from and to the hive. The enormous amount of work here involved precludes the idea of any one bee ever living long enough to gather more than a fraction of a pound of nectarine sweets. As bees are known to fly for miles in quest of suitable fields of operation, it is clear that a single ounce of honey represents millions of miles of travel. It is no wonder that these industrious little insects have earned the reputation of being "busy" bees.

In the *British Bee Journal* for Dec. 8 a couple of correspondents, thinking that the statements above were too big to be swallowed whole, take occasion to analyze them. The first one, under the appropriate *nom de plume* of An Indignant Bee, replies in this facetious style:

AN INDIGNANT BEE'S FORCIBLE REMONSTRANCE.

Will you allow me, as a humble member of that highly respectable but little understood body, to wit, the bee community of these islands, to draw your attention to some dreadfully misleading statements contained in a paragraph entitled "Wonderful Work of Bees," in your issue of the 24th ult.?

Now, sirs, I have been applying my mathematical knowledge (I presume you will admit we bees know something of mathematics) to an examination of your figures; and, assuming that twenty-five cubic inches (say at the most) make a pound of honey, from your data—"3,750,000 trips for each pound"—I arrive at the conclusion that *your* precious "busy" bee carries each trip a load of nectar containing the $\frac{1}{150,000}$ of a cubic inch, an atom imperceptible, I suppose, without the use of a microscope. What bee among us would have the impudence to venture home with such beggarly pillage? All the sensible "workers" in this 'ere hive were highly indignant at being thus misrepresented, and by our own especial organ, too; indeed, one "good old worker," carried away, doubtless, by passion, was heard to ejaculate "Rot!"

Then we are told that a "single ounce of honey represents millions of miles of travel." Now, I myself, as a rule, like to get my load as near home as possible; but when I have information of a treasure trove, I sometimes scurry around a couple of miles or so. Well, now, say I fly off two miles and back again, four miles in all; my total journeys (according to your showing) are four times 3,750,000, or 15,000,000 miles to collect my pound of honey; in other words, not much less than one million of miles for an ounce! Is there no discrepancy here, I wonder? To my mind, your statements are erroneous and incompatible—or, to put it vulgarly, they are "all over the shop." I beg to enter my protest against your allowing such loose statements to find their way into our journal, which has hitherto won golden opinions among us for its championship of our cause.—AN INDIGNANT BEE.

[We are quite concerned as to the manner in which we may safely venture to offer our humble apologies for having ruffled the susceptibilities of the "indignant one," whose wrath is poured down on our head as above. If we begin with "My dear madam," the indignant one will probably retort, "I'm *not* your dear madam; in fact, I'm not a 'madam' at all; so don't address *me* in that way." *Then* what could we say, for, as "science" teaches, *she* would be right? And so, having much faith in the *suaviter in modo* when dealing with *Apis mellifica*, we make our best bow and observe: "Look here, old girl"—the "old," bear in mind, always means *young*)—we thought it just possible that some of our young fellows, who call themselves bee-keepers, might have been led to take in the figures quoted; but a thorough-going, hard-working, sensible bee, like yourself, with mathematics at your finger-ends as "pat" as some females have knitting-needles—never! Give our compliments to the other indignant ones in "this 'ere hive"—not forgetting the "good old worker,"—tell them all, but tell her especially, it *is* all "rot," as she beautifully puts it, and that we, from the first, believed it to be nothing else. Tell them also (we must get the blame on to some one's head, you know), that "it was all along of the printer, and that we will, if they decree it so, send you his name and address; and if you want to keep that printer from sleeping for a month, just drop him a line to say that the very first time he comes within sound or sight of a bee-hive, a swarm of indignant ones will drop on his bald head (if it isn't bald it ought to be, and he's *awfully* frightened of a bee). In the meantime, believe us to be still your humble admirers (for even *you* can not charge us with want of admiration for a "good old worker" bee), and we faithfully promise not to print anything likely to make you get "waxy" again; in fact, we are ready to promise whatever you like rather than forfeit the "golden opinion" held regarding us by bees in general, and so we still venture to subscribe ourselves your *very own—Eds. B. B. J.*]

[The next correspondent replies thus:]

THE "SCIENCE" OF BEE-KEEPING; "WONDERFUL WORK OF BEES (?)."

I am a novice in the *science* of bee-keeping, but a great many years ago I very successfully mismanaged some bees. I built a bee-house, had some boxes made of fearful and wonderful shapes, got them stocked with bees, and then, from my proud position as an "advanced" bee-keeper, looked down upon my neighbors, who were nothing better than skeppists. In two years I had raised about a dozen colonies, but up to this time all the entries were on the debit side of the account. However, the time had now arrived when the immense profits of my "system" were to begin to pour in. I can not now remember what constituted my special system of mismanagement, but I know it was so successful that, at the end of another two years, I found myself in possession of a bee-house (the worse for wear), a dozen or so empty boxes (much deteriorated), and a large lump of very dirty-looking beeswax.

My skeppist neighbors appeared to see a comic side to this matter; I never could. I thought I had finally bidden adieu to "our little friend, the bee," but a brother in Ontario sent me, as a present, Root's *A B C of Bee Culture* and a year's numbers of *Gleanings*. Needless to say, I enjoyed the reading immensely, and, as I read, I began to feel dimly that possibly I might have made some slight mistakes in my former attempt at bee-keeping; so I determined to "try again," and last autumn obtained two skeps, containing an old stock and a very late swarm; from these I have this autumn gone into winter quarters with four good colonies in bar-frame hives of my own make, and during the summer have taken 42 pounds of honey, about one-

third of which was in the comb. This magnificent triumph did not make me proud. I still nod when I meet my skeppist neighbors, and (when no one else is near) I sometimes even stop and speak to them. No, I am not at all conceited, and to you, Messrs. Editors, I come in all humility as a *novice*, anxious to learn.

Of course, I take the *B. B. J.*, and in No. 544, page 462, I read a short article on which I should like to say a few words. Under the heading, "Wonderful Work of Bees," we are told that it requires 3,750,000 bee-loads to make a single pound of honey! Figures like these take away the breath of a novice, and set him to "figure it out." I suppose there are cases on record of English bee-keepers, during heavy flows of honey, obtaining 3, 4, or 5 pounds of honey in a day from one hive. Mr. Root, under "Basswood," says that his biggest yield was 43 pounds in three days—or over 14 pounds a day; and Mr. Doolittle, in note 13, says that he got 66 pounds in 3 days—or 22 pounds per day. I will deal with this last extreme case—probably the largest yield on record. Supposing the figures to be correct in "Wonderful Work of Bees," the number of journeys to and from the hives to store these 22 pounds would be 82,500,000. Granting that on these days the bees would work full power for 15 hours, that would require 91,666 bees per minute, or 1572 *per second*, to go into the hive, and the same number to pass out. Again, assuming that each bee takes only 15 minutes to gather and deliver its load, and (never resting) makes 60 journeys in the day, then the actual number of bees required to gather the 22 pounds of honey would be 1,375,000, weighing about 275 pounds, or nearly 20 stone, exclusive of the young bees not leaving the hive, and the drones! Truly, it makes a novice's mouth to water to think of a swarm of bees heavier than a sack of wheat and bigger than a feather-bed!

As I do not think for a moment that friends Root and Doolittle would make their statements unless they were absolutely true, and as I am quite sure that there never was a colony so large as the one figured above, I fear we must look for the error in "Wonderful Work of Bees," especially as there is a manifest mistake in the statement that 62,000 clover-flowers yield a pound of honey, which is carried away by 3,750,000 bees, so that to clear one clover-flower of its nectar 60 bees must each carry away a full load.

May I suggest, that perhaps it would be nearer the mark to say that "to gather a pound of honey 3,750,000 clover-flowers must be visited by 62,000 bees"?—in this case, the latter part of "Wonderful Work of Bees" would require to be much modified.
—J. W. WILSON, *Revesby, Boston, Nov. 28, 1892.*

[Although we have, by a slight inadvertence, laid ourselves open to the poking of a little legitimate "fun" at our expense by printing the newspaper cutting referred to as it appears on p. 462, we do not quite regret the "slip" made, because it has shown us that some readers, at least, are sufficiently alive to the absurdity of the statements regarding bees, which usually go the rounds of the newspaper press, to decline swallowing them without thought or consideration of any kind, as so many do. As a matter of fact, the paragraph in question was intended to appear "quoted"—as is usual with news and cuttings—and also with an expressive (?) following the title. The omission of these marks, of course, entirely conceals our disbelief in the story, which we had set down as an unusually strong "penny-a-liner." If we could venture to think that the same wide publicity would be given to what appears in our pages this week on the subject as was accorded to the offending paragraph in question, we might say, "All's well that ends well;" but that can scarcely be hoped for, truth being so frequently less acceptable than fiction. In any case, the fact of our being "pulled up"—as we have been in the above two amusing communications—may serve as an explanation why so many of the press cuttings (kindly sent by correspondents who "think they may be of some interest to bee-keepers") find their way into the waste-paper basket.—*Eds. B. B. J.*]

[On page 61 of our August JUVENILE GLEANINGS, for 1882, E. E. Hasty, of Richards, O., gave some interesting experiments on weighing bee-loads. The results of many tests showed that a light bee-load weighed about 1 grain; a full bee-load (that is, from a bee that drops down at the entrance) was from $1\frac{3}{4}$ to 2 grains. There are 7000 grains to the pound avoirdupois; therefore, according to Mr. Hasty's calculations, it would take from 3500 to 7000 bees to carry a pound of nectar. We believe this attempt of Mr. Hasty was the first and only one at weighing bee-loads; and in the light of subsequent experiences we believe it to be tolerably accurate. It shows how wide of the facts was the newspaper clipping. It is somewhat refreshing to us Americans to know that reporters sometimes tell big yarns in England, as on this side of the pond.]

THAT SKUNK.

E. FRANCE TELLS US HOW TO CATCH AND KILL THEM WITHOUT GETTING INTO TROUBLE.

Oh that skunk! What about it? Why, it has been after my bees. The 26th of November, my son, N. France, and myself went out to fix in the straw to our last yard of bees. When we got there we found skunk-tracks in the snow. It had been to every hive in the yard. From two hives he had worked the bees out at a great rate, and, to all appearance, it had been coming there every night for a long time; in fact, it understood how to get the bees out of the hive and eat them. Of course, it must be killed. Newell tracked it home to its hole, a quarter of a mile. We had no traps with us, so we had to go home and let it work until we could come back again; and as the next day was Sunday we did not go back again until Monday. Then Newell took eight good steel traps and went and set them all for the skunk. As I was an old trapper, I gave him instructions how to set them. To save trouble after it was in the trap, he was to cut a sapling large enough so the skunk could not move the trap toward its hole; then, after setting it in the mouth of the hole, he was to fasten the trap to the sapling and drag it back the whole length of the chain, so the skunk could not get down into the hole with the trap.

The next morning I went with Newell to dispose of the game. We found it in the trap all right, caught by the fore foot, and it was down in the hole the length of its body. We pulled on the sapling slowly for a couple of minutes, when the skunk came out of the hole and took a look at us. We gave it time to make up its mind that we were not going to fight with it; then we pulled the pole, top end first, toward a creek, about 20 rods away. We went slowly at first until the game got used to it. We got it to the creek, and dragged it into a deep hole of water. When it was in the water, all it thought of was to get out; but the trap held it there, and it was soon drowned without raising any smudge.

As I am an old trapper, and have had to handle a great many skunks, and I see that quite a large number of our bee-men are troubled with them, you will excuse me if I make a few remarks about handling the animal. In the first place, I don't think that one skunk in fifty ever molests the bees; in fact, this one that we have just killed is the only one that has ever disturbed our bees, to our knowledge; and I believe that I could detect him as quickly as any other man, and I am just as ready to kill it as any man when I prove him guilty of mischief, either with the bees or poultry, or in other ways doing damage. But I won't condemn the whole tribe because I have found *one* in mischief. The average skunk is a friend to the farmer. It gathers bugs and grubs all summer, and makes nearly all of its living from those pests of the farmer, and so I won't hurt the much despised skunk unless I know it is in mischief. When we find one is doing damage,

it is very easily got rid of. It is a very easy animal to catch in a steel trap. It won't make any smudge when it is caught, if there is nothing there to scare it. It never uses that dreadful weapon but in self-defense. When you have got it in a trap, don't scare or fight it; come up to it carefully and slowly; make friends with it; talk to it; work up slowly; watch its tail. As long as it keeps its tail down there is no danger; but if it raises its tail, step back—there is danger. Don't make any quick motions. Work slowly and carefully. It may take half an hour to get up to it, near enough to move it away or work close by it. You can easily make friends with it, if you don't work or approach it too fast. The trap-chain may be tangled, or wound around something, so that it must be free before you start to move the animal; but by taking a little time, and being sure not to scare it, the trap-chain can be easily got free; then fasten the trap to a pole of some kind—10 to 15 feet long. Now take hold of the other end of the pole and slowly pull it along toward some water deep enough to drown it. If the work is done carefully you won't smell the skunk at all. But perhaps you have not any water-hole near enough to go to. Then, perhaps, the best way is to shoot it. In that case, take a shotgun; put in a good heavy charge; stand about ten feet away; get a side shot; shoot it through the small of the back, as that will paralyze the whole hind parts, and there will be no smell. But that will spoil the skin for fur. A friend of mine has trapped them for the furs, and he carried a knife about four inches long and half an inch wide, stuck in the end of a broom-handle. After making friends with the skunk he would stand before it and stick it as you would a pig, when it would bleed to death. Mind, he did not catch the skunk and hold it to stick it, but stuck it standing without being held, except that it was in the trap.

HOW TO PRESERVE COMBS.

To preserve combs from the ravages of worms and mice (see GLEANINGS, Dec. 1, Stray Straws), I have a room in one of my buildings 10x10 feet, 7 feet high, lathed and plastered; one window and door; cellar under the room. Combs put in there in the fall, and frozen during the winter, are safe for any length of time. I hang them half an inch apart. In the spring and early summer, if I have combs in our out-apiaries that are beginning to show worms, I bring them home and put them in this same room and smoke them heavy with sulphur. One smoking with me is enough to make a sure job. I have a little sheet-iron stove down cellar, in which to burn the sulphur. A four-inch pipe takes the smoke up through the floor into the room. When I have only a few combs, and don't want to make a dense smoke in the whole room, I hang the combs in extra supers, and pile them up over the stovepipe hole in the room; cover them up tight; then smoke them as hard as I please. I never fail to kill every thing in that pile of combs, big worms and little, and eggs—all are killed the first smoke.

WHERE THE CLUSTER OF BEES SHOULD BE FOR WINTERING.

In Stray Straws, Dec. 1, Dr. Miller quotes Hasty as saying, "A cluster formed touching the top, and stores below them, is very much safer than a cluster formed away down, and stores above them." I think Hasty is mistaken for outdoor wintering. We winter outdoors several hundred colonies every winter; and at the approach of frosty weather they cluster below the honey. The most of our bees are on frames 21 in. deep. If we raise the honey-board now in December, there will not be a bee to be seen. They are away down below their stores, and that is right. Bees clustered above their stores will starve if there is a long cold spell. The heat from the bees rises. The bees can work up but not down in very cold weather. I have over 100 colonies in L. frames. I always winter them on two sets of frames—one set above the other. I want the upper set to be solid full of feed. The lower set must have empty combs enough for the bees to cluster in, for the reason that they can not live among full combs of honey in cold weather. They can not keep the honey warm. When bees cluster for a cold snap they crawl into the combs, a bee in every cell; then bees in the spaces between the combs, making a solid ball of bees. In that way they keep warm. They cluster close to the feed, but not among it. Bees will work off sidewise to get feed; but if there is feed above them they will work up, where it is warmer.

THAT BEE-KEEPERS' UNION.

Now a few words about the Bee-keepers' Union undertaking the job of putting down adulteration in honey. It is a big fight. The Union is not strong enough. The Union has done splendid work; but unless we can get a great many more members I don't believe we had better undertake too much. I had rather see another society formed to fight the adulterators; then, if we can get enough members in the new society to make any thing of a successful fight, by a vote of the two societies the two could join in one. But don't spoil the old Union by loading it down with more than it can carry. E. FRANCE & SON.

Platteville, Wis., Dec. 13.

[Your experience with regard to the proper location of a cluster of bees for outdoor wintering is exactly ours. We don't remember that we ever lost a colony when the cluster was below the honey—so far down as to make the hive appear almost empty when the packing material was removed from the top; but we have lost them when the bees were on top of the honey. —With regard to skunks, we have never had experience either to corroborate or disprove that of Mr. France. The most of us will have to accept his instructions, without argument.—With regard to the Bee-keepers' Union, we feel that an association that is protective ought also to prosecute adulterators, as well as defend bee-keepers from unjust accusations of ignorant neighbors. One that has both functions will secure a larger membership than a union having either one of the powers alone. It is a large membership we want and must have.]

A BACHELOR'S PROTEST.

ONE OF RAMBLER'S VICTIMS: A MATRIMONIAL BUREAU FOR CALIFORNIA "BACHES."

Mr. Editor:—Let this thing stop right here. Do put a muzzle on the Rambler. He is not only "unraveling" himself, but he is undoing, or, rather, "doing up," the rest of us bachelors in a manner truly scandalous. When he came among us, something like a year ago, no one suspected his true character or thought to look and see whether he had cloven hoofs. We saw in him only a nondescript individual of roving tendencies—a traveling bee-monger, a wandering Kodak fiend, in station rather above the ordinary tramp or "blanket man," yet considerably lower than the angels. He was a stranger, and, after the manner of the country, we thought to "take him in." But he proved to be foxy, this planet (or shall we say comet?) in the apiarian system, and, instead of paying

an exorbitant price for an inferior or foul-broody apiary, he inveigled one of our leading apiarists into leasing him a choice ranch on terms exceedingly favorable to "ye traveling man." Then, instead of staying at home and herding his bugs like a respectable bee-man, this Rambler developed a decided mania for spying out the country and making remarks more or less vile about the inhabitants thereof, through the pages of GLEANINGS.

But, "the worm will turn;" "the galled jade winces," and I kick. The cinch pinches, and I buck. Rambler knows from sad experience what that means.

Neighbor Ferguson and I took Rambler's account of the Grayback trip good-naturedly; but when that shameful "California Flap-jack Act" appeared, there was a "blood on the face of the moon." Then good Dr. Miller suggested the propriety of pulling down my vest and hunting a wife, or words to that effect, and this last "straw" had the proverbial effect of dislocating the spinal column of the patient *camelus*. Then came a letter of inquiry from a chap "'way down in Tennessee," who chuckled over my discomfiture, and I realized the necessity of using some ink—of "shooting my dye-stuff," so to speak. However, the Rambler poured oil on the troubled waters by sending me a letter in which he inclosed some "crocodile tears," expressed regret at the mischief he had done, and explained that GLEANINGS' artist was responsible for the unholy display of tongue on page 768, to which Dr. Miller alludes in words "writ sarcastic." Is it possible that, in their laudable efforts to produce a race of long-tongued bees, the GLEANINGS outfit have got "side-tracked," and are trying to produce a longer-tongued bee-*keeper?* And would the new feature be extended to the bee-keeper's wife? Heaven forbid!

Now, GLEANINGS for Dec. 1st lies before me; and after reading Bro. Root's advice on page 898 I am constrained to make some remarks. Uncle Amos' suggestion of suicide as a possible means of escape for such unhappy mortals as myself is doubtless a good scheme; but I could never do it during the watermelon season —never!

Bro. Root speaks of "lonely ranches where bee-men stay year in and year out." Those men are doubtless the ones who trouble the conscience of the senior editor. Personally I have had little experience of that sort, and have usually spent more than half the year in a very different line of business, and my apiarian life is a source of rest and change, as well as pleasure and profit. One grows weary of the restless struggle for existence in town and city, where "man's inhumanity to man" is seen oftener than the kindly "touch of nature" that "makes the whole world kin," and welcomes the coming of the season when he can "go off, 'way off," and for a few months revel in the sunshine with "the blessed bees," beautiful birds, and beloved books. Until reading Bro. Root's advice I had fancied my simple happy life in the companionship of kind old Nature, who "ever faithful is to such as trust her faithfulness," and "communes in various ways" with them, rather harmless; and never has the peal of church organ or chime from cathedral spires inspired within my soul "so calm, so deep, so holy a feeling" as came over me when first I climbed the "tall cliff that lifts its awful form" above the canyon where my cabin now stands. I was hunting a "location," and, leaving my pony at the foot of the mountain, I reached the summit just as the sun burst into view over old Grayback, and the morning breeze tossed and rolled the sea of fog that filled the valley below into great billows, till it looked as I have seen the ocean in a storm. As the grandeur of the scene came over me, lifting all that is best within me toward the infinite, a sense of "the peace that passeth understanding" came with it, and I exclaimed, "Here we rest!" Yet Bro. Root thinks me a miserable sinner, and "quotes Scripture" to sustain his position. What the sage of Medina thinks is doubtless this: If in that wild canyon a lonely bachelor can find health that makes very existence a joy, sermons in its stones, old friends in every flock of feathered visitors, a constantly recurring benediction in its glorious sunsets, and, above all, is raised to a sense of oneness with the Unseen by the matchless beauty of its summer nights, to what heights of ecstasy might he not soar with a congenial mate to share his joys and sorrows? I believe Uncle Amos is right, and must make haste to "secure the substance ere the shadow passeth," for surely the balmy winds would waft to us a "breath from Eden's bowers," and "two souls with but a single thought" would walk in the garden, as did that first pair of which we read in the front part of the Book. Often have I wondered what purpose in the great economy of nature that fig-tree has, that grows wild below my cabin. Now I *sabe!* But right here the Rambler gets in his wicked work, and renders vain my hopes of earthly paradise; for what fair one would set foot in Wilder Canyon after seeing the "California Flapjack Act?" My chances would be better were said canyon the regions described by Dante, with the legend inscribed upon its rocky walls, "Leave hope behind who enters here." Verily I am out and injured, and the Rambler is to blame. Mr. Editor, please muzzle the "critter," or at least keep him on a chain, and don't permit him to scatter all over the country in future.

In closing, permit me to suggest that, if Mr. Root would establish a matrimonial bureau at Medina he would become a national benefactor, and, it may be, ease his troubled conscience. Children would rise up all over the country and call him blessed! We need the gentler sex in California, and could arrange to have them sent to us in carload lots, F. O. B. (which means For Old Bachelors like) H. E. WILDER.

Riverside, Cal., Dec. 14.

P. S.—I should be pleased to hear from any lady bee-keeper who thinks that wilder surroundings would be congenial. My canyon is wild, and I am WILDER.

THE DOVETAILED CHAFF HIVE.

WHY W. C. FRAZIER PREFERS IT AS A GENERAL-PURPOSE HIVE.

The best hive that has been put upon the market up to the present time is the Dovetailed chaff hive. This hive, as the name implies, is dovetailed. It is made of three-eighths lumber, double-walled, with a space of about 2½ inches between the walls. This space can be filled with sawdust, chaff, or, best of all, with ground cork. The hive itself weighs only 4 lbs. more than the single-walled hive. The cork packing weighs only 4 lbs. extra, this making the hive weigh only about 8 lbs. more when packed than the single hive, and gives a hive that will protect bees on the summer stand in almost any climate. But the greatest thing, and most advantage, is in having a hive that will protect the bees in the spring. It is intended to use this hive with a super on through the winter, in which there is a chaff cushion. Some of us don't find it convenient to use chaff cushions, on account of the trouble to make them, the time used in putting them on, and in removing

them and taking care of them until needed again. The need of a cushion can be obviated by cutting the lower inside corner of the regular cover a very little with a plane, thus making it fit the same as on the regular Dovetailed hive. This, all who use them will find to give a hive that is very much better than to have to keep a super on them all the time.

This hive takes the regular Langstroth frame, 17⅜x9¼, and is intended to hold 8 frames, and room for a follower and wedge. The design is to use the self-spacing Hoffman frame. Those frames have been on trial now for two years. If you intend to remove your bees from place to place, or haul them in any way, this frame is what you want. When they are keyed up properly they will stand a great deal of rough usage, without breaking down, especially if in wired frames. This frame was intended to be one on which there would be no brace or burr combs built; but in this respect it is a failure. It was also intended that the bees should not propolize the frames together, but somehow the bees could not see it that way. They propolized the frames together so well that three or four can be taken out together without coming apart. They build burr-combs from the frames to the cover-board in nearly every hive; and they so effectually build brace-combs between the frames that a hive might be turned over and handled in the style the baggagemen handle trunks, without the least danger of the frames becoming loose.

I have over 200 of these frames in use at present, and speak from experience. I think the trouble is in grooving the comb-guide out of the frame. The thick-top frame 1x⅞ gives the finest combs in the apiary, perfectly straight, and not a brace or a burr comb in a hive full of them. If frames could be gotten with 1x⅞ top-bar, and otherwise the Hoffman frame, I think they would be about the thing. The tendency to propolize the frames together can be overcome by rubbing the parts where they come together with cosmoline. This is inexpensive and effectual. Any super used on an eight-frame hive will do for this; but the regular dovetailed super, with pattern slats, will be found the most convenient; and the matter of sections is worthy of some attention.

It will be found that bees fill and cap sections quicker if they are not too thick; and narrow sections will be built as straight, if foundation is used, without separators as wider ones with separators. I mean to try eight to the foot next season, if pattern slats can also be secured.

This hive costs one-third more than the regular single-walled Dovetailed hive. It is better to use them, and keep one-third less bees. The honey the colonies in them make will more than pay for the difference in cost. Colonies that were even in the spring, if one is in a single-walled hive and the other in a packed chaff hive, the one in the chaff hive will build up and be in much better shape for the harvest than the other, all else being equal.

To make assurance doubly sure, I shall leave my Dovetailed chaff hives out until settled cold weather comes, and then set them in the cellar.

Atlantic, Ia., Dec. 7. W. C. FRAZIER.

[It was not claimed—at least that impression was not intended to be conveyed—that the Hoffman frames would not be stuck together with propolis; in fact, it was explained by us that two or three could be lifted out at a time *because* propolis would hold them together. See May 1st, 1891, p. 369. We have never tried vaseline; but from the number of favorable reports we have received we have no doubt of its success for the purpose.

We can not understand why you should have had burr-combs when all the rest, with one other possible exception, report no burr-combs with these new top-bars. Let's have reports. If bee-keepers generally prefer the ⅞-inch top-bar without being molded out so as to leave the comb-guide in relief, we can give it to them at the same price.]

CALIFORNIA FLORA.

EFFECT OF CLIMATE ON THE SECRETION OF NECTAR.

All countries or sections of countries where dry warm climates predominate, possess the most superior honey-flora. In proof of this assertion, make a note of Southern California, parts of Nevada, Arizona, and Colorado. The indigenous honey-plants in the above-mentioned sections are rich in nectar of the choicest kind. Aside from the wild bloom (where water can be obtained), alfalfa, the great desert honey-plant, will revel in its glory and furnish an abundance of nectar. The honey gathered from alfalfa in the desert regions is very superior to that gathered from alfalfa along the moist river-bottoms of the San Joaquin and Sacramento Rivers; in fact, alfalfa yields a great deal more honey per acre in these desert lands.

Not speaking of the irrigated districts of alfalfa in Southern California, Nevada, Arizona, and Colorado, there are no better honey-producing lands on earth. California, with its white, black, blue, and yellow sages; sumac, California lilac, alfalfa, alfilaree, button-bush, holly, incense cedar, and folocio(California lilac, holly, incense cedar, and folocio are Eastern and Northern California honey-plants); Nevada, with its yellow sage, alfalfa, willows, and hundreds of lesser conspicuous honey-plants; Arizona, with its numerous species of cacti, which produce honey in enormous quantities; its mesquite and other wild honey-plants, and its immense tracts of alfalfa; and Colorado, with its Rocky Mountain bee-plant, vast tracts of alfalfa, and thousands of other bee-flowers which bloom in lavish abundance, gives but a faint outline of some of the sources of honey in these favored bee-lands.

It is strange, but nevertheless true, that the best honey is produced in a country having a dry warm atmosphere; the more moisture there is in the air, the less nectar there is secreted, and it is also more inferior in quality.

And, again, there is something strange how a plant will yield honey one day, and the next it will not. It must certainly be an atmospheric influence of some kind that starts and stops the plant from secreting nectar. Possibly electricity has much to do with it; may be a certain quantity of this element is required to start nectar, and a certain other amount to stop nectar secretion. Just before a thunderstorm there is more nectar in the flowers than at any other time; on these occasions the flowers seem to yield all their nectar at once; for in a day or two afterward they are destitute of it, and it requires several days for them to recover their original prolificness of nectar again. Some persons may think that the rain washed all the nectar from the flowers; but I will state that, in thunderstorms with but a few drops of rain, it is the same.

In view of the above facts, it is quite certain that the amount of nectar secreted in the flowers is due to certain atmospheric conditions or influences with which we are unacquainted. There are seasons when every vale and hillside is a perfect hot-house of bloom and blossom; still there is no nectar in the flowers. Again, there may be a profusion of bloom and an im-

mense crop of honey may be gathered. Scarcity of bloom is no indication that there will be no honey crop.

Some seasons are a great deal better than others. In California we depend to a great extent on the amount of rainfall for the abundant secretion of nectar. In irrigated alfalfa districts the secretion of nectar is about the same one year with another.

Some plants yield honey every season, some every other season; and, again, some once every three or four years. Among this latter we may mention the locust; the apple-blossom yields nectar only about once every third season; holly, every other season; manzanita and the sages, every other season, although the manzanita yields a little honey every season, enough to start them to building comb pretty lively. The wild coffee, so far as my experience goes, yields about as much nectar one season as another.

There are some seasons when every plant, tree, and shrub seems to yield an abundance of honey. We frequently hear the following: "Mr. A. never had a better honey crop; every thing is filled to completion; hives running over with bees." Mr. B., but a few miles away, reports bees on the verge of starvation; will have to feed them all unless prospects change.

Now, why this wonderful difference? Some seasons bee-flowers in certain localities yield nectar profusely, and the next season very sparingly. The chances are that the next season Mr. B. will have the big honey crop and Mr. A. will not do half as well with his bees.

In regard to the prolificness of nectar secretion in bee-flowers on the Great American Desert, it is certain that the more fiery portions of it tend to dry all the moisture from the air; and this moisture produces that favorable atmospheric influence necessary to the secretion of nectar.

Still, perchance the soil plays a prominent part in nectar secretion. Most of the desert soil lacks a certain per cent of humus, or vegetable mold, and is best supplied to this soil by turning in a crop of alfalfa or sweet clover.

Sweet clover is beginning to be considered an excellent forage and honey plant, and is also very valuable for enriching alkali soils. In Utah and Nevada it flourishes without the least care and attention, and year by year it is steadily increasing the fertility of the land. It is stated by good authority, that a good deal of honey that is accredited with being gathered from alfalfa is in reality gathered from sweet clover. In Calfornia, white and red clover do not amount to any thing as honey-plants. The climatic influences here are not favorable for honey secretion, as in the Eastern States.

I once sent to A. I. Root and obtained a few small packages of the seeds of honey-producing plants. The seven-top turnip, Simpson honey-plant, and spider flower, all came up and grew well, and in time bore a profusion of bloom. The seven-top turnip blossomed at a time when a multitude of superior honey-bloom predominated, and, of course, was neglected by the bees. The Simpson honey-plant blossomed at a favorable season of the year, but attracted no bees. The cleome, or spider-flower, was a decided success. Every morning, from the interior of each flower depended a small crystal ball of nectar, and it was music to the bee-keeper's ears to hear and watch the bees as they hummed and quivered around these scented blossoms with their crystal sweets.

A Southern California bee-keeper sent to Cuba and obtained the seeds of the great Cuba honey-plant, the bellflower. The plants flourished well in this climate, but were a failure as regarded nectar secretion.

In California, honey-plants yield best when the temperature registers about between 80 to 90°. Cold winds are very unfavorable for honey secretion; but the warm winds bring the right temperature and atmospheric conditions.

When the unfavorable winds are blowing, bees are very vindictive and cross, and difficult to manage; but let the winds change, and in a marvelously short time bees are remarkably gentle and quiet.

Taken all in all, the laws governing the secretion of nectar are somewhat shrouded in mystery; but in due time they will all be cleared up. S. L. WATKINS.

Grizzly Flats, Cal.

BEE-ESCAPES.

THE PRINCIPLES OF THE PORTER AND OF OTHERS COMPARED; THE TIME REQUIRED TO RID BEES OF A SUPER, ETC.

In Stray Straws for Nov. 1, Dr. Miller asks: "Will an escape make quicker work in daytime or at night?"

With your permission, Mr. Editor, I will try to answer Dr. Miller's inquiry; and, for the benefit of all parties concerned, give some of the details of the experiments with bee-escapes, and the facts gleaned thereby.

Many of the readers of GLEANINGS remember that the writer had the pleasure of testing what has proven to be the only practical and convenient bee-escape now before the public (the Porter spring bee-escape), before it was placed upon the market. All the forms of escapes known at that time were tried, and all, except the one so widely known now, from the defects of the little machines or the peculiar habits of the bees, proved to be unsatisfactory. The spring escape was tried in all conceivable forms—perforated tin tops; perforated tin tops and bottoms; two or more exits; with springs closing up to side walls or partition in the escape, similar to the so-called Hastings escape. Several escapes were placed in one board to ascertain whether or not the bees would leave the supers quicker through several exits than through a single one. These tests were made both night and day, through good and bad weather, both cold and hot, and when there was an abundance of nectar in the flowers, and when there was neither nectar nor flowers; and the facts gleaned from these experiments, we believe, will ever remain unchanged.

The present form of the Porter spring escape is the best that can be devised for thorough, practical work. Escapes with single springs pressing against the side walls or partitions in the escape clog up with dead bees, where double springs do not, simply because the double springs give a larger opening with less pressure than can be had with single springs. To an observing mind it would naturally appear that escapes with several openings, or perforated tops and bottoms, would give better satisfaction in the matter of ventilation; but many practical tests in this direction show that a single exit, together with the cracks at the joints of the hives, made by adjusting the escape-boards, give all the ventilation that is necessary or desired.

As to the rapidity of the working of escapes, when they work best, etc., I give the following from a small circular published by the Messrs. Porter:

"Owing to the varied dispositions of the bees of different colonies under the same conditions, there is a great difference in the length of time occupied by them in passing from the super; and with the bees of the same colony, the size

of the super, the time of the day, the state of the weather, the presence or absence of a honey-flow all have their influence to vary this time. As a rule they pass out most rapidly when all conditions are such that they are naturally the most active."

As bees are more active during daytime than at night, they leave the supers more readily during the daytime. Bees, too, that, under the influence of a good honey-flow, would leave the supers in a few hours, may, in a time when there is no nectar, and the weather is cool and cloudy, be as many days in deserting the supers. Thus it will be seen that those who wish to accomplish the most that is possible with the best escapes must work when all things combine to their interest.

As to the difference of time occupied by the bees of any colony passing from a super through a single escape, as compared with several escapes, it is not discernible. A whole colony could pass through a single escape in less than one hour, if their anxiety to move out could be awakened to such a degree as to cause them *all* to want to get out in that time. But as there is no way by which such an anxiety can be awakened, the only thing to be done is to allow them their own good pleasure; and in this direction a single escape is better than a dozen, as there is less heat from below through one opening than through several.

Liverpool, Ill., Dec. 13. S. A. SHUCK.

A NOVEL IDEA.

A CHEAP HOME-MADE BEE-ESCAPE THAT DOESN'T COST A CENT.

To those wanting super-cleaners for next season, but who did not realize enough from this year's honey crop to pay for them, I will try to explain my plan, which will not cost them a cent for material, and but very little labor to try it. All that is necessary in order to clean a super of bees is to shut them off from communication with and the heat of the brood-chamber, and then leave a door for their escape. But in warm weather this door must prevent them (or others) from going back. This I accomplished with seventy-five colonies, without a failure, last season, by simply fastening a sheet of newspaper over the pattern slats of an empty super, or section-holder. This cuts off most of the heat, and leaves a 4½-inch space between the surplus and the brood, when in position. Then for a door (connecting the two) or escape, take a stick ½ inch square, sharpened from the four sides, and with it punch several holes down through the paper. Do this over the center of the bee-space between the slats, and you will have a combination of the spring and cone bee-escape, and I doubt its infringing on either of them. Put it on the hive in the evening; and if all of the bees have not passed through it from the supers above by next morning, then something is wrong with the escape or else brood above. The same plan may work over a super filled with empty sections, with only a bee-space between the paper and the surplus to be cleaned; but I have never tried it. JNO. HANDEL.

Savanna, Ill., Dec. 10.

[It is very possible that you have given us a valuable discovery. The bee-escape is so simple and so cheap that it does not *seem* as if it would be worth any thing; but if, as you say, you have tried it on 75 colonies, without a failure, there must be something in it, and should merit at least a trial from every bee-keeper. After mentioning the use of the newspaper, you say punch holes in it with a stick ½ inch square, "sharpened from the four sides." This makes the point, as we understand you, pyramid-shaped, and holes punched with this instrument will be self-closing; whereas those made with the point of a pencil, or any kind of stick with a conical point, would not be. To illustrate, suppose you prepare, as soon as you read this, a stick ½ inch square, pointed as described, and another one of the same diameter pointed like a leadpencil. Push both through a newspaper, and note the difference. The square stick, with its pyramid point, makes a hole that will tear something in the shape of a letter X. Bees can go through it easily *one way;* but the other way, the four points coming together close against the bee. The conical point tears out some of the paper. We shall certainly give the plan a trial next summer; but while such an escape would not be a very permanent affair, it would answer admirably in lieu of something more expensive and possibly no better. The number of holes can be increased to facilitate the passage of bees downward; and this is one great point in favor of this novel escape. Oh, say! if you forget to take this escape off afterward, the bees will do it for you, bit by bit.]

RENDERING WAX.

SOAK THE COMBS BEFORE MELTING; GOOD SUGGESTIONS.

In the recent discussion regarding the rendering of wax in the most economical manner, the chief reason for soaking the combs seems to have been overlooked. It is recommended to soak the slumgum, but it is the combs that should get the soaking. Soak them in acidulated water (2 lbs. sulphuric acid to a barrel of water) until the pollen and such parts of the cocoons as are not impervious to water by reason of propolis are thoroughly saturated. This not only decomposes these substances, but prevents their absorbing the wax, provided the melting process does not cause the evaporation of the water. But even if these substances, by reason of drying out, as in a solar extractor, do absorb some wax, it is far easier to get it from this slumgum than from that in wich the combs were not first soaked.

I use my solar extractor only for cappings, bits of new combs, etc. The old combs are broken up and "put in soak" until I am ready to render them, when they are dipped out and melted in a large kettle. This hot mixture of wax, water, etc., is poured through a double strainer into a settling-can. The upper strainer is of wire cloth, and the lower of cheese-cloth. The matter that is caught in the upper strainer is, while still hot, returned to the kettle, and *boiled* in strongly acidulated water. It is then poured into a cloth bag, and all fluids are squeezed out by twisting the bag up tight. The wax is afterward clarified by the usual process.

Where combs containing granulated honey are to be rendered they are uncapped and subjected to slow heat until the honey is melted. A solar extractor, if carefully watched, will do this work nicely, and scarcely start the wax. After the honey is out, the combs are treated the same as other old combs.

The refuse left by the foregoing process is hardly worth burning. I wish to emphasize the fact that great care must be used in handling sulphuric acid. *Never pour water into the acid, but pour the acid slowly into the water.*

ARTHUR C. MILLER.

Providence, R. I., Dec. 12.

[The idea of soaking the combs before rendering the wax is no doubt good. We have never tried it, but will do so at the earliest opportunity. We set the last sentence as above in italics, because it is very important. We have given the same caution once or twice before, but it will bear repeating again. Our readers will remember the writer as the one who first *successfully* used a heated plate for fastening foundation to sections.]

O. R. COE'S METHOD OF RENDERING WAX WITH AN OLD EXTRACTOR-CAN.

Friend Root:—My method of rendering wax from old combs is so much easier, simpler, and better (in my estimation) than any other I have seen described in any of the bee-journals that I can not forbear giving it, for the benefit of others.

I take an old honey-extractor can that had a home-made reel in it, and, taking out the reel, I fill the can ¾ full of water and heat to the boiling-point. I now throw in a lot of old comb and stir it up well. I now take the perforated tin pail or basket that I had made to use in a Swiss steam wax-extractor, and suspend it from a screw-hook in the ceiling overhead, so as to hang just over the surface of the hot water. I now dip the refuse from the hot water into the suspended basket; and as the water and melted wax run back into the can I draw hot water from the faucet of the large can and pour it into the refuse in the suspended basket, and thus rinse out the wax from the mass of slumgum. I now take the basket by the two handles and give it a shaking motion, causing the mass to roll over and over in the basket until it is quite dry. It will drain when treated in that way, when it would not if stirred with a stick. If there is yet wax remaining in the mass of slumgum I pour on more hot water, and repeat the process until I get every particle of the wax out. When the refuse is thrown out I fill up the basket with a new lot, treat as before, and continue to add more comb from time to time, until the can gets pretty well filled up with wax. I now lower the basket, empty it into the mass of melted wax on top of the water in the can, and, as fast as the wax strains into the basket through its perforated sides, I dip it off into the pails or buckets I wish to cake it in, and thus get it in nice condition. If one wishes to keep a brisk fire and rush business, keep a bucket of cold water, with a dipper in it, handy by, else it may get so hot as to boil over and make trouble. If one has a large kettle he wishes to use in rendering wax, it can be used in the same manner, if he has water kept hot in a tea-kettle, to use in rinsing the mass of slumgum in the basket; but some large can, like an extractor-can, with a faucet, is much better. O. R. COE.

Windham, N. Y., Dec. 8.

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

THE COLD PROCESS OF MAKING SYRUP FOR FEEDING; HOW TO MAKE A PERCOLATOR.

I notice in GLEANINGS you speak of the expense that would be incurred in making syrup by the cold process. Surely you do not understand the process, else you would know it is really cheaper than the boiling process, as it is no trouble, and requires no fuel. Take a half-gallon or a gallon bottle, and break out the bottom; then in the neck of the bottle insert a moist sponge—not too tight. Fill the bottle with granulated sugar, then keep the sugar covered with water. You will find a first-class syrup, dripping from the sponge—one that will not sour nor granulate; is no trouble, and not expensive; one unusually heavy. This can be made on a larger scale, and kept for months. When once started you can continually fill up with sugar and water, and keep up a continual percolation. CHAS. F. HAAS.

Canal Dover, O., Dec. 18.

[We are very glad of the information, friend H., and at the first opportunity will give the matter a careful test. The plan is so simple, if syrup will not granulate, that it will commend itself to bee-keepers, because it would save soiling the "gude wife's" stove, getting up a hot fire, running the risk of scorching, etc. But bee-keepers want to make syrup on a more extensive scale than could be made in a gallon bottle. A tub or half-barrel could be made to answer, providing there was a hole cut in the bottom, say three inches in diameter, with a wooden tube inserted, two or three inches long, having an inside diameter of two inches. This tube would answer for the neck of the bottle, and a sponge could be inserted therein in the same way. Such a device would make the syrup on a larger scale, and would probably meet the requirements of most bee-keepers. The only question that remains is, whether the feed would granulate without something in the way of an acid or honey to prevent it. There may be a chemical reason why syrup percolating through a sponge would not granulate; and if so, perhaps our correspondent can enlighten us a little further.]

WORLD'S FAIR; IMPORTANT FOR WISCONSIN BEE-KEEPERS.

I desire, through your paper, to ask your Wisconsin readers who contemplate making a honey exhibit at the World's Fair to write to the corresponding secretary, notifying him of the fact, and to do it at once, as it is important to the managers to know the probable amount of honey that will be offered for exhibit. The State Society, which meets in February next, will have control of the matter. By notifying the secretary they will receive full instructions.

J. W. VANCE, Cor. Sec.

Madison, Wis., Dec. 8.

PERFORATED ZINC WITH ROUND HOLES IMPRACTICABLE.

I see in the price list that the zinc honey-board is being used for a burr-comb excluder as well as a queen-excluder. Now, I want it to be a pollen-excluder, and I think it can be made that also. Just make the perforations round instead of oblong, and just the distance across they now are. Of course, there will be more of them. C. STEPHENSON.

Conyers, Ga., Dec. 6.

[The ordinary zinc honey-boards do exclude pollen to some extent. If the perforations were round, it would no doubt scrape off the pollen, but would make it very difficult for the bees to get through. It would practically exclude not only the queen and drones, but the bees also.]

PRIORITY OF LOCATION: BEES THAT WILL LOOK OVER THE FENCE.

I am "monarch of all I (need to) survey." I believe Dr. Miller owns every thing that is produced on the piece of land he mentions on page 888, including the nectar produced by the flowers, just as much as he owns any other crop raised on it, and it is his privilege to harvest it if he can; and if he keeps bees he can get at least a portion of it; but while his bees are go-

ing for it they look over the fence and see a fine chance to gather some of Bangs' nectar, and then they trespass on his crop. Now, Dr. Miller is a very conscientious man, and does not bring up his bees to do so, but somehow they will do it; and the only way Bangs can protect himself is to keep bees on his side of the fence to take some of Dr. M.'s nectar. It is said, "Doctors never take their own medicine;" but Dr. M. will have to do so in this case.

Lawrence, Ill. J. L. ANDERSON.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

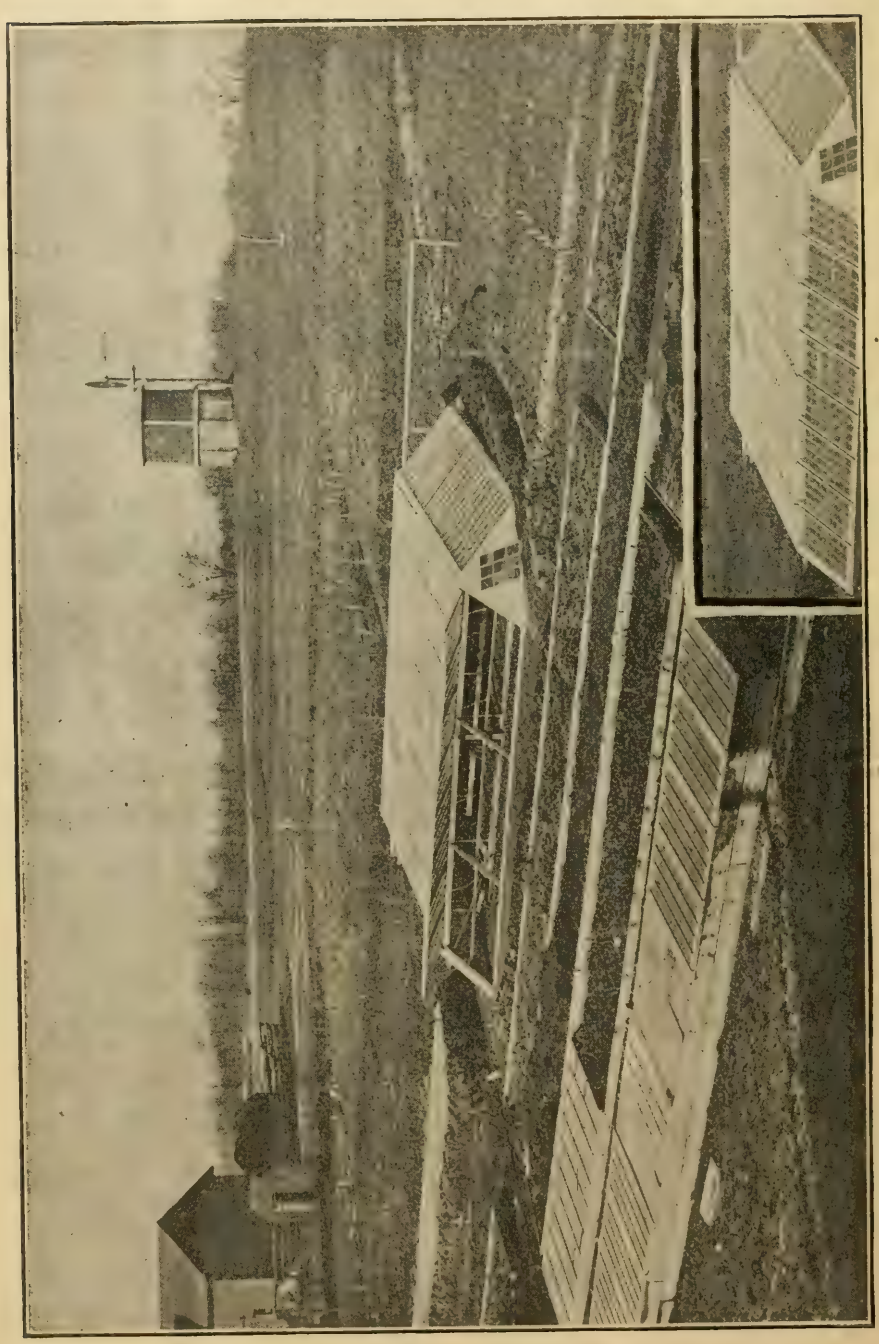
STORING UP HEAT, AS WE STORE UP ELECTRICITY IN A STORAGE BATTERY, ETC.

In our last issue, toward the close of my remarks about heating the greenhouse by hot water, I used this expression: "I presume likely the same hot water might be used over and over again after heating the plants or dwellings by hot water; and this would be quite a saving over taking cold water from the hydrant and letting it go to waste while still hot." Well, friends, the thing I suggested has been done, and the exhaust steam is now simply heating the same body of water over and over again. The apparatus is so cheap compared with most heating arrangements, that I have decided not only to give you a picture on the opposite page, but also a diagram of the manner in which it is done. The cut we give you is a view taken from one of the windows of the factory. While Ernest took the first picture, I stood inside the greenhouse and had just operated the apparatus that lifts all together the eight sashes fronting the street. This is done by simply turning a crank. The apparatus comes from Hitchings & Co., of New York city. At the lower right-hand corner is another view of the structure, with the sash all down. On top of the hill is the windmill and tank I have frequently spoken of. At the lower left-hand corner you get a little glimpse of the street that runs between the factory and my hot-beds. Besides using the exhaust steam from that little engine for warming the greenhouse, it was originally used (as it is now,) for warming quite a string of hot-beds. When the factory was first built, a 10-inch sewer-pipe was laid under the street, perhaps three or four feet deep; and this goes down under the basement of our first main building. The engine that works our electric lights happened to be located right over this sewer-pipe; therefore, in order to conduct the steam across the street to my hot-beds, it was only necessary to push a 2-inch iron pipe down through this 10-inch sewer-pipe to the engine. In the diagram, the end of this 2-inch pipe is marked "Exhaust pipe." The steam is liberated as it emerges from under the street into the 6-inch tile. This is common drain tile, such as is worth 4 cts. a foot. The drain tile that goes under the *hot-beds* is only 4 inches in diameter; but as two branches of this could not take care of nearly all the exhaust steam, I afterward laid the large 6-inch tile that you notice in the diagram. This originally went direct from the hot-beds to a point about 200 feet out in the lot, up toward the windmill. You will notice it sticking up out of the ground, a little at the right of the windmill, in the large picture. Before the greenhouse was built, the exhaust steam used to go away up in the lot, and come out of this little chimney, as it might be called. Well, when I decided to build the greenhouse I took up a portion of that 6-inch tile and changed its course, making it run back and forth under the beds in the greenhouse. It goes into the house just under the window you see in that three-cornered panel. You will notice a light streak in the ground, running from that window off toward the east. Since the picture was taken I have had another hot-bed made right over this line of tile. Let us now refer to the diagram.

Shortly after the steam leaves the exhaust pipe from the engine, it comes to a point where an inch iron pipe comes from the hydrant into the 6-inch tile. At this point it turns at a sharp angle and goes inside the 6-inch tile, up to the greenhouse. Inside of the greenhouse it leaves the tile, in the center of one of the beds, and goes up under the glass. Then it runs back and forth, and clear around the house, under the sashes, until there are about 190 feet all together, inside of the structure. Then it goes down into the beds again, and back under ground nearly to the hydrant. This last is marked "Return pipe." The water comes into the greenhouse so hot that you can not bear your hand on the pipes. By the time it has made a circuit, however, if the weather is cold the water is comparatively cool. Of course, this depends a good deal on the weather. Sometimes it goes out scalding hot. The operation is as follows:

The exhaust steam, when liberated inside of that 6-inch tile, commences at once to condense into water. In doing this it parts with a great amount of latent heat. A part of this is communicated to the water constantly moving inside of the iron pipe. The larger part, however, goes into the tiling, and from that into the ground; so that, in the course of time, not only the tile, but the ground for several feet each way, becomes so warm that snow rarely stays over it in the winter. To economize heat, however, we usually have this 6-inch drain tile covered with beds and sashes; or, where the bed is not used, we cover it with boards. You see, the whole thing is automatic. If the engine runs every day, the tiling and the dirt around it accumulate sufficient heat to run the hot-water pipes through the night. Last night, the evening of Dec. 23, the thermometer was very near zero; but the pipes were quite warm this morning, and plants as tender as some Hubbard squashes were unharmed. Of course, I did not plant squashes at this season of the year. I presume the seeds were in the manure used for the hot-beds.

Later.—This morning, Dec. 26, the pipes in the greenhouse are still warm, although it was 4 degrees below zero last night, with quite a severe north wind. Please notice, the engine stopped running at 9 o'clock Saturday night; and before it was started this Monday morning, the pipes were warm enough, as I have said, to protect the contents of the greenhouse. Notwithstanding the cold on Christmas day, this morning a lot of radishes were found above ground that were not up Saturday. It seems to me almost like some of the stories of enchantment, as I go in and sit down in the darkness during a cold winter night, where I can put one hand on the inlet and the other on the outlet pipe. There is no sound to break the stillness —no boiler nor fire, nor any thing. In this perfect quiet, with only the stars to be seen through the glass overhead (twinkling for company), the hidden forces of nature are doing their duty. The water keeps coursing all night long, bringing up the heat from that underground passage, and distributing it where it is needed. Of course, this has not been accomplished without some hard work and faithful experimenting; and I think it will do no harm to add, even here, some *praying* for divine wisdom



THAT NEW GREENHOUSE HEATED BY EXHAUST STEAM CARRIED THROUGH COMMON DRAIN-TILES.

and guidance; and when each step in the experiment has succeeded, there have been many thanks to God uttered while I was alone with the work I loved. When I adopted the plan of returning the same water, so as to use it over and over again, of course I had to have a standpipe to allow the water to expand and contract with the changes in temperature. But after putting this in, I found I could not draw from these pipes to water my plants, and a third pipe, running to the hydrant, seemed to be a necessity. After some experimenting, and waiting and watching, I succeeded, however, in dispensing with the expansion tank entirely. This was done by leaving the valve, which you see near the hydrant, partly open, so that the pressure from the windmill tank on the hill constantly remains on the whole apparatus; so that, as it is now, you can draw hot or warm water from any part of the house for any purpose whatever. By the way, what a fine thing this would be for a dwelling-house! You could get hot water or warm water from any part of the house where hot-water radiators were placed, or wherever needed, and the supply could come from the regular waterworks. With this system of heating buildings by exhaust steam, the building to be warmed should be some little distance from the engine—say from 100 to 300 or 400 feet; and if the dwelling were on high ground, all the better.

The thing that has astonished me so much is the amount of heat furnished by the exhaust steam from so small an engine, with so cheap and simple an apparatus. We are just now considering a similar arrangement to utilize the heat that may be given off from the exhaust steam from our large 90-horse-power engine. A considerable part of it is already used for warming our factories; but there is a great surplus, even at this moment, spouting out into the frosty air.

On the left of the greenhouse you will notice a string of sashes banked all around with coarse strawy manure. This is the new celery culture I have been telling you about. It grew nicely all through the fore part of December. Since our zero temperature, however, I have not dared to take off the sashes. I feel pretty sure, nevertheless, that the celery is all right. It has no steam heat under it, for celery is very apt to rot with much bottom heat. It is a difficult matter to regulate the heat, any way, in hot-beds, during zero weather. On this account I greatly prefer a low greenhouse, something like the one given in the picture. It is raised so little above the surface of the ground that there is not much danger of freezing, even if used for a cold greenhouse. Then the operator can at any time go inside of it and around among the plants, regulate the temperature, gather his product, sow seeds, do transplanting, or any thing of the sort. Such a greenhouse costs but little compared with the structures used by florists, and the glass can be quickly taken off and stored away when the season arrives when glass is no longer needed.

As it may be of interest to know just how we lay out the beds and paths, we submit an additional diagram. The paths are cut down just deep enough so the workmen can stand upright under the sashes and timbers that hold the sashes. In the highest part, this brings the paths about a foot below the surface of the ground, while down at the south side, where your humble servant stood while he operated the elevating machinery, the path is about two feet deep. The dirt is held in place by means of pine boards nailed to oak stakes driven into the ground. The beds are almost half manure for a depth of 12 or 18 inches.

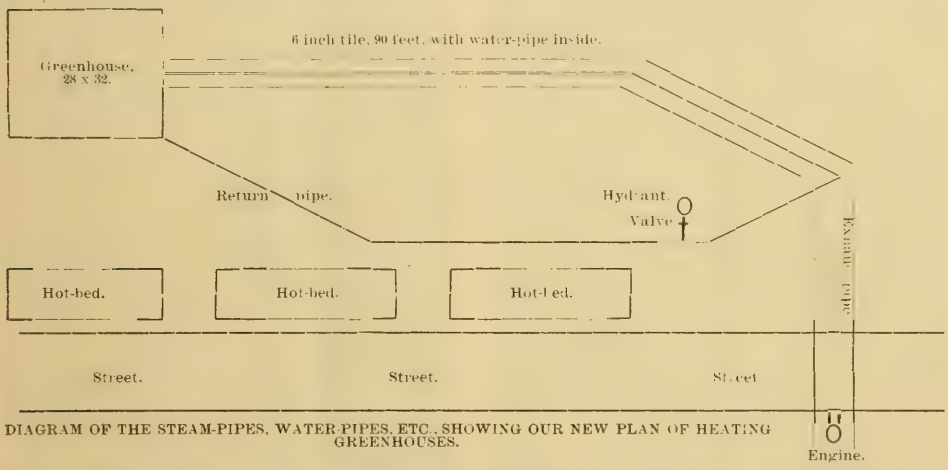
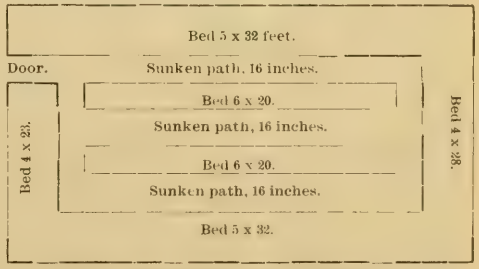


DIAGRAM OF THE STEAM-PIPES, WATER-PIPES, ETC., SHOWING OUR NEW PLAN OF HEATING GREENHOUSES.

SOWING TURNIPS FOR A LATE CROP.

I mentioned, a while ago, that we usually put in a sowing of turnips quite late. Well, this season our late turnips grew all through November, and made quite a growth, even during the fore part of December. We some time ago gathered all we supposed were large enough; but seeing they were getting to be of good size, I told one of the boys to gather enough for dinner, and if they were uninjured by frost he might gather all that were of sufficient size. To my astonishment they were the sweetest and nicest turnips of the season. Burpee's Breadstone turnip is remarkable for standing a



PLAN OF THE BEDS AND SUNKEN PATHS.

very low temperature, and it also keeps much better than the common flat or round turnips; and for a table turnip, my opinion is there is nothing in our seed catalogues to compare with it. At present we get 25 cents a peck for the Breadstone, but only 10 cents a peck for the Purple-top Globe. You might ask why we do not raise *all* Breadstone. Well, it requires a longer season, like the rutabagas; but the Purple-top Globe grows so quickly we can put them in the ground after other crops that are gathered quite late.

NEW PLANTS AND NOVELTIES FOR 1893.

Although we are constantly experimenting with the novelties, we do not find many things each season enough better than our old varieties to warrant giving them a place in our catalogue. When we do get something valuable, however, it often repays us for all our experimenting. I have several times taken some special vegetable, and planted every variety I could find in our most voluminous seed catalogues. The verdict has so often been, "No improvement in any of them," that it is getting to be rather monotonous. During the past season, we have given a careful test to Henderson's Country Gentleman corn. It is certainly a stronger grower, and has larger ears, than the Shoepeg, while the quality is just as good. Very likely it has been developed from the Shoepeg; but when planted side by side with it in the same ground, it shows a very distinct superiority. Onions, melons, and a great many other things, during the past season, seemed to sport more than usual. In other words, the seed did not seem to be true to name. After I noticed that our Experiment Station had the same trouble with onions, I began to think it was something in the season. I can not quite understand, however, how the season should make Prizetaker onion seed show a greater number of *red* onions, as well as the usual straw color. I can, however, understand how so much wetness might make them *badly shaped*, and perhaps it did.

The trade in onion-plants raised in hot-beds and greenhouses will probably be a remarkable feature during the coming season. The greenhouse I have shown you is admirably adapted to this business. For raising onion-plants to put out in the field, no heat is really needed, for they need not be started till February or March. If started in February you will perhaps need some bottom heat, such as you get from fermenting manure. I shall commence sowing onion seeds in our hot-beds and greenhouses in January. The little plants must have lots of sunshine. They get contrary, and refuse to grow unless you have your beds where the sun can strike them full and square. Celery-plants, however, will do nicely, even if they do not get a bit of sunshine at all; therefore you can give your celery-plants the shaded beds. Pie-plant does just as well without a bit of light; in fact, we get the handsomest stalks in a dark cellar. L. L. Langstroth, while here, told me that pie-plant can be forced in an ordinary cellar, without heat from fermenting manure, or any thing else. My impression is, the cellar should be rather warm, or you should use a warm place in the cellar. Asparagus, also, grows very well in the dark; but I think it makes larger and stronger shoots where it can have some sunshine. I have never tried raising peas under glass; but we have some just now coming up in that new greenhouse. While I think of it, who has raised the Freeman potatoes during the past season? and has anybody got any for sale? It does not seem as if we should let friends Terry and Maule monopolize so good a thing much longer.

OURSELVES AND OUR NEIGHBORS.

How amiable are thy tabernacles, O Lord of hosts! My soul longeth, yea, even fainteth for the courts of the Lord; my heart and my flesh crieth out for the living God.—PSALM 84: 1, 2.

It is a bad plan for Christian people to travel on Sunday. I know it is bad, in the same way that Mark Twain knew it was bad to tell lies. Somebody asked him what made him so positive in regard to the matter, and he said he knew by experience. In the same way, I know by experience that it is bad and demoralizing, for one who professes to be a Christian, to encourage Sunday travel. I am not going to lay down rules that will apply to all people and to all circumstances; and, in fact, I am not going to lay down any rules at all. I am simply going to give you a little experience that Mrs. Root and myself had when we thought we were obliged to travel and do business on Sunday. When we got ready to leave El Paso we found that, by taking the *first train*, we could only reach New Orleans some time Saturday night or Sunday morning; but when we got on board I supposed we could stop over, but found afterward we could do so only by buying new tickets; and as the *sleeper* was paid for through to New Orleans, we should also lose our sleeper tickets. Under the circumstances there was really nothing to do but to decide that, as soon as we reached New Orleans, to get a boarding-place somewhere near the depot, and then get to church as soon as we could. We reached New Orleans about two hours before church time, and I left Mrs. Root at the depot waiting-room while I sallied forth to find some sort of home during our week or ten days' stay in the city. I did not leave her in the waiting-room, after all, for the beautiful June morning called her outdoors, as it did almost everybody else. Even though it was the last of February, peach-trees were in bloom, things were coming up in the gardens, trees were leaving out, etc. When I started out to find a lodging-place on Sunday I felt guilty. It is true, we might have gone to a hotel; but we did not want to pay hotel bills, and we thought it would be better to find a quiet lodging-place, even though it was Sunday. I had been in New Orleans before, but some way that Sunday morning I didn't remember the lay of the city very well. I thought I would keep a little out of the business part, and therefore I strayed back into the oldest part of the city, as I was afterward told. The houses were all old, and exceedingly dirty. The paving-stones in the street looked as if they had been worn by the tramp of centuries; and although I walked a mile or two, I could not find a single spot but that looked as if it also held the accumulation of the *filth* of centuries. The people where I applied for rooms were dirty and disgusting. At first I did not stop at all where the surroundings looked so forbidding; but I got tired and sweaty, and it was getting near church time, and then I became nervous, because Mrs. Root would wonder where in the world I could be so long, and I thought we should have to put up at some *sort of place*, at least until Sunday was over. So I became desperate. Not only were the prices higher than any thing I ever heard of before, but when I looked into the rooms I felt sure that Sue would never consent to even step over the threshold. Why, dirt and filth and disorder were no name for it. I finally found a public square where there was a garden, flowers, monuments, etc. but even the garden and *flowers* looked dirty and sorrowful; and overlooking this square I found a room considerably better—that is, there

was more tawdry finery about it; but the woman who had it in charge wanted $2.00 a day just for the room alone, to say nothing of board. Sick at heart, guilty in conscience, and homesick withal, I decided we should have to take this—at least for one day. Then somebody told me I could get a nice room at a low price, but the man who owned it was clerking in a saloon, and I must go into the saloon to see him; and on the principle that drowning men catch at straws—no, no! it was not *quite* so bad as that, I know, but I felt a good deal that way—I ventured for the first time in my life to enter a saloon on *Sunday*, and it was a New Orleans saloon besides. Oh dear! to think that anybody can want to stay in such a place, amid such talk and such surroundings, and especially on God's holy day!

So far I had abstained from riding on the street-cars; but I was so sweaty and used up that I felt that I must have relief. Besides, if I should attempt to go back all the way on foot we should never get to church at all. Oh how I did long to be with Christian people as they gathered into a Christian church about that time every Sunday morning! I thought of the words of my text at the head of this talk, and I felt them as I never did before. Was it possible that David felt as I did when he said, "My soul longeth, yea, even fainteth for the courts of the Lord"? At any rate, those words seemed better fitted to express my feelings then than any language I could ever have framed myself. It seemed as if I had traveled almost all over the whole great city of New Orleans; but I was honest when I told Sue that I had not found even one decent home for human beings. Toward the close of my walk I met people on the way to churches, with their Bibles and hymn-books; but somehow even these people did not look like the Christians I had been wont to meet with on Sunday. I suppose my guilty conscience was at the bottom of the whole of my bad feelings that morning. When I told Sue the situation, she said at once that we should go to the nearest hotel and then get to church. But, lo and behold! there were no hotels near the depot. There were some low whisky-shops that did a little hotel-keeping as a kind of side issue, but we felt as if we could not go there. Everybody recommended us to the St. Charles; and, even though it would cost $4.00 a day for each of us, we decided it was the shortest cut toward "remembering the Sabbath day, to keep it holy." Of course, we had to ride on a street-car, for the St. Charles was two or three miles away. It was the same car I came up on; and I knew that my companion must be more shocked than she ever was before in all her life, by the sights that met my eye as I came up. It was where the car passed the French Market. She soon began to make protests as we came near people in the rush and whirl of busy traffic on God's day. I told her to wait a little and she would be astonished still more. A little further, and a great crowd of people—thousands, in fact—were "hollering" and yelling, and jostling each other, while auctioneers, street-fakirs, venders of all sorts of games and tawdry finery, made such a hubbub and roar in their efforts to shout the merits of their wares, that it was like a little Babel on earth.

I have forgotten just what Sue said, but it was something like this: "Why, husband, is it possible that here in the United States, and on God's holy day, there can be found such a disgraceful scene as this?" When I was talking to a friend about it afterward he replied, "Oh! the thing is not near as bad now as it used to be years ago. They have stopped the drinking, and quieted down the disorderly element, so it is quite respectable now to what it was once."*

We finally came on to a street that *did* contain some nice stores and buildings; but it was full of people, and there was little to indicate to anybody that it was other than a week day. We approached the great St. Charles Hotel. When I thought of mixing in with that busy crowd there, it seemed to me as if I could not stand it. I had been praying to myself for quite a little while—yes, my heart had been full of prayer and promises to God, that, if he would deliver us this time, as he had so many times before, I would try hard to avoid being obliged to travel on Sunday hereafter. Then somebody touched my arm, and a pleasant-looking man said, "Excuse me, friends, but I take it you are strangers here, and may be you would like quiet and respectable accommodations right in this neighborhood, where it will cost you only half as much as at the St. Charles." I said at once that he was just the friend we were looking for; but Mrs. Root suggested that we look at the room first. I felt as if I would take any thing with my eyes shut just then, providing I could get it of somebody who talked and acted in such a frendly way as did that man. We were ushered into the room, that cost two dollars a day each, including board. As soon as the door was closed, I said, "Thank God, we are finally where we can get ready for church." I had taken it for granted that our room was quite respectable; but when I expressed as much, Sue took hold of one of the pillow-slips and stripped it back. There it was—grease, dirt, and filth, simply covered up by a thin bit of starched white cloth. Then she lifted a portion of the carpeting with her foot. Now, in our home, if you lift a carpet or pillow-slip you will not find any thing *out* of sight that does not correspond with what is *in* sight. The carpets and rugs, and every thing that will hold dirt, get out on to the clothes-line, and get such a spanking that they ought to remember it ever afterward. We were alone. I put out my hand to my wife, and we knelt down and asked God to take us poor helpless sinners into his care and keeping. Then we hastily slicked up, and joined the crowd of people that were on their way to one of the large fine churches in New Orleans. The simple fact of joining in with a lot of people who looked and acted like Christians, was like balm to our troubled souls. There was an immense audience, and the sermon was a grand one—just such a one as you might expect for such a nice, clean, intelligent-looking congregation of people. Toward the close of his remarks the preacher spoke of the beautiful monuments to be found here and there all through New Orleans. He spoke of the beautiful statue of Margaret, that I have described to you before. Then he used words something like these:

"My friends, why have the people of New Orleans seen fit to thus preserve the memory of our departed great? Did the man whose marble statue we see in the park in front of this church win his right to be thus remembered by

*In all my travels, north, south, east, and west, I had never before come across any such state of affairs as met my eyes and ears that Sunday morning in New Orleans. San Francisco has been called a wicked city; but I have been in almost every part of it, and on Sunday too, and yet no such din and clatter and disorder and uproar ever before came to my ears. Still, the people in and around that French market seemed to take it as a matter of fact and an everyday occurrence. The nearest approach to the scene I have ever seen is the crowd around a low-lived circus just before the door is open. Before beer-selling and gambling were banished from our State fairs, we used to see, years ago, something a little like it, only on a smaller scale.

saying in his life, 'Great am *I*, and *I* will prevail?' No, no! We have men in our land who *imagine* themselves to be great—those who think that by their money they can command the respect and the esteem of their fellow-men; but we never build monuments to perpetuate the memory of such. The one whose statue stands so near this church never *thought* of self. He was forgetful of self. He did not even try to make money and get rich. He said, 'Great is *truth*, and it will prevail,' and he magnified the name of *Jesus Christ* instead of parading himself. That is why he became *great*, and that is why we feel proud to think that such a man ever lived, and thank God for his memory as we pass by the beautiful piece of work with its surroundings dedicated to his memory."

I am sorry that I have given the above so poorly and imperfectly. The thought was presented by one of our finest scholars and greatest orators. As soon as church was out, we hastened to see whose name was carved on the monument that was chosen to grace the center of the beautiful park. Sure enough, it was the name of Benjamin Franklin. This park, in front of of the church, was clean, refreshing, compared to the locality I traversed in the morning.

After we got home from church I remembered that I had in my pocket a letter from J. W. Winder, whom I used to be a little acquainted with when he was a bee-keeper in Cincinnati, some twenty years ago. I left Mrs. Root in our room, while I hunted up friend Winder; and, sure enough, he *was* "friend Winder" that Sunday afternoon, in every sense of the word. Almost his first words were, "Why, brother Root, why did you not come right to me? I had a room engaged for you. I expected that you would, of course, come right there and bring your wife." Then I hurried back as fast as I could to Mrs. Root. We paid a dollar for the use of the room while we were gone to church, and then came the answer to our prayers of the morning. Sue had been saying that she felt as if she must have a little rest where she could look out upon green grass and flowers and trees; and Mr. Winder had chosen a real gem of a place for us. When I looked at it and contrasted it with my adventures of the morning, it seemed almost like stepping from earth to heaven. The lady who owned the rooms was a devoted Christian, and we soon became fast friends. She took us to their services and prayer-meetings, and they wanted me to speak to the Endeavor Society; and then friend Winder wanted to introduce me to a young man who had given up tobacco because of the talks in GLEANINGS; and after he had given up tobacco he felt as if he would like to go still further and become a Christian; and I heard him give his testimony at the Endeavor Society. Then friend Winder took us to hear a Methodist preacher who is devoting his life to looking up the children who are employed in the factories in New Orleans. But I shall have to tell you about this in my next paper. In this present one I have given the dark side of New Orleans. Now just wait a little and I will show you some of the bright side, for there are Christian people and beautiful churches and devoted pastors doing God's service valiantly there as elsewhere; and there are beautiful clean homes and fine gardens and residences that will compare with any thing we have anywhere. Folks who travel on Sunday do not, as a rule, get a glimpse of the best people and the best things in this world, and they need not expect to.

I afterward discovered that the difficulty I found in getting rooms, especially in that part of the city, and the high prices that were asked for very indifferent ones, was owing to the fact that our arrival in the city was just a little before the advent of the Mardi Gras carnival, and almost every thing in the shape of a lodging-place is usually engaged, oftentimes at enormous prices, weeks beforehand. I make this explanation lest I should leave the impression that our Southern friends are, as a general thing, exorbitant in their prices for accomodadations. In my next I will tell you how many of the necessaries of life can be procured in New Orleans for less money than in almost any other city in our land.

THE OLD MISSION CHURCHES OF THE PACIFIC COAST.

When I spoke of these, and mentioned going inside of the old church at Paso del Norte, I had never been told that the Old Mission people were Roman Catholics. You may think me stupid, but it is nevertheless true. Somebody told me they were a sort of Jesuits; but that did not convey any particular meaning to me. I certainly had no intention of hurting the feelings of any one of my readers, and I humbly beg their pardon for my carelessness. Quite a number of long letters have been received, explaining quite fully the faith of the Old Mission people who pushed their churches and their teachings far into the wilderness of the Pacific coast years ago. Now, dear brothers and sisters of that Old Mission church I spoke of, and wherever else you may be found, will you not join with the rest of us in waging war against wickedness and sin wherever found? And may we not hope that the bull-fights, described below, that are held so near to that very old church, may soon be either stopped altogether, or made to go a little further away from its sacred precincts?

BULL-FIGHTING, AND THE OLD MISSION CHURCH AT PASO DEL NORTE.

We take the following clipping from the *Penny Press*, of Cleveland:

FIVE BULLS TORTURED AND TWO HORSES KILLED.

EL PASO, TEX., Dec. 7.—Bull-fighting was a feature of the annual festa at Juarez, Mexico, just across the Rio Grande from this city.

The ring adjoins the old church, for the Mexicans believe in bull-fighting as firmly as they believe in their creed, and make it a leading feature of the church festivals.

Three thousand people saw five bulls tortured, two horses killed, and another wounded. The first bull turned in refused to fight. The second was not as big as the first, but had plenty of fight. He sent the toreadors behind the blinds in a hurry, and brought first blood by hooking one of the men in the hand. The three other bulls brought in made good fights.

There were several narrow escapes, and two fighters were caught, but not seriously hurt. These incidents set the Mexicans to yelling frantically.

Two horses were killed under one picador, and a third was severely hooked. The horses were blindfolded, and wholly dependent upon the science of their rider for protection from the mad rushes of the bulls. But the fellow handled the pike clumsily, and utterly failed to keep off the bull, whose sharp horns would penetrate a horse's side, and horse and rider would be thrown to the ground. The picador was rescued while the infuriated bull was goring the horse.

The last bull was killed by the picador at the first thrust of his sword, which entered between the shoulder-blades and cut the beast's heart in two.

And this, dear friends, occurred only a few days ago. If not exactly in the United States, it was just over the line, an easy walk from Uncle Sam's domain. Truly there is a field for missionary work right close to our boundaries. I have thought best to give it, as it corroborates what I said in my description in regard to locating the arena for bull-fights so near the old church.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
Illustrated SEMI-MONTHLY
36 PAGES 7×10
$1.00 PER YEAR

Butter and honey shall he eat, that he may know to refuse the evil, and choose the good.—ISAIAH 7:15.

WE are enjoying a "cold snap" just now. How are those bees?

BY the time this number is in the press we (Mr. and Mrs. A. I. R. and E. R.) expect to be in attendance at the North American convention in Washington.

WE wish to call particular attention to a novel paper bee-escape, described in another column, that can be made for less than a cent each by anybody, and by the hundreds, with no other instrument than a pine stick.

ONE of the drawbacks to the business of keeping bees is the *uncertainty* of the honey crop. Rambler, in this issue, in his comparison of the honey industry to that of the making of beet sugar, brings this out in strong contrast.

ON page 888, Dec. 1, friend Golden uses the expression, "in all stages down to eggs, and not a queen." He meant to say, "*not a queen missing.*" In correcting his manuscript he accidentally scratched out the "missing" word. The word seems to have been "missing" all round.

ALTHOUGH Bro. Hutchinson was severely criticised on account of his course in the sugar-honey matter, the last number of his journal shows that he stands fire well. Instead of "getting mad," nothing daunted he accepts the criticisms in good part, and goes ahead and gets up an unusually good number of that already excellent paper, the *Bee-keepers' Review.*

WE had hoped to close the discussion on sugar honey in this issue as previously announced; but as it is such a "red-hot subject," and as two more of our able correspondents beg to be heard, the matter will *have* to run over into our Jan. 15th issue, after which time we must positively refuse to entertain further discussion, at least for the present. Perhaps some of us "didn't know it was loaded."

THAT picture of the Rambler at the World's Fair, and the general remarks on matrimony, by the senior editor and Dr. Miller elsewhere in the same issue (Dec. 1), raised a perfect storm from the bachelors in California. We give, in another column, a good sample of how one bachelor feels. His article is not exactly a storm of abuse nor a howl of protest, but a bright, witty rejoinder, and a facetious dissertation on the character of the Rambler. We have come to the conclusion that it is risky business dealing in futures, especially in the line of matrimony, and, and—perhaps some of our bachelor friends have felt *just so* before.

FOOD AND FUEL—HOW THEY ARE WASTED.

SOME good authority on heating dwellings says that, with many of the open grates and fireplaces, nine-tenths of the heat goes up the chimney, and only one-tenth is utilized for warming the room. Another good authority states that, when we swallow our food as the majority of people do when they eat their meals, three-fourths of it goes off as waste, and only one-fourth nourishes the body. So you see you will really *save money* by eating slowly and chewing your food until the machinery of the digestive apparatus can get hold of and utilize every bit of it. A. I. R.

CHESHIRE AND COWAN ON DIGESTION OF NECTAR, AND DIGESTION IN GENERAL.

On page 10, Prof. Cook makes a couple of quotations from Thos. W. Cowan's excellent work, "The Honey-bee," in which he, Cowan, seems to corroborate Prof. Cook. Some time ago when this matter of digested nectar came up, Mr. Cowan sent us a letter in which he differed quite materially from the position of Prof. Cook on the matter of digestion. This letter was forwarded at the time to the professor, but was by him inadvertently mislaid, and hence was never published. Now, if two such great lights hold different views on the subject of digestion, will it not largely modify the force of the quotations so far as they may support Prof. Cook's position? In all of this discussion a great deal hinges on what we mean by digestion, or what definitions we may accept. Now, with regard to Cheshire, if we understand the matter correctly he does not support Prof. Cook's position at all. The quotations which we herewith present from Cheshire's Bees and Bee-keeping, Vol. I., were first pointed out by W. F. Clarke, in the *Bee-keepers' Review;* and as they answer our purpose, we reproduce them here. The first one appears on page 60, Vol. I., and reads as follows:

> Let us now investigate in detail the stomach-mouth and chyle-stomach. We have already learned that the first of these enables the bee to store honey, which, although carried within her body, does not enter her digestive system.

The second one, on page 65, reads thus:

> The honey-sac of the bee corresponds to the crop of most insects. When nectar is gathered by the foraging bees, it is simply held in store in this cavity, the processes of digestion in no true sense beginning until the next chamber, the chyle-stomach, is reached.

To make sure we were right, we verified the quotations as above, and find them, as furnished by Mr. Clarke, to be correct, by the volumes of Cheshire we have.

CUT NAILS VERSUS WIRE NAILS FOR BEE-HIVES; WHAT NAILS TO USE FOR DIFFERENT KINDS OF WORK.

WE notice by the New York *Tribune*, that "cut nails have been determined, after a government test, to be superior to wire nails in holding power." This verifies our personal experience exactly. It is a great mistake to use wire nails to fasten sidewalk boards to the runners (or stringers). If you will take notice, you will see that all such boards secured by wire nails will show the heads of the nails sticking up in a few months, anywhere from a thirty-second to an eighth of an inch above the surface of the wood; but not so with cut nails. They never stick up unless the wood is worn or rotted away around them.

A couple of years ago we owned, as some of our readers remember, a kicking horse. He took particular delight in battering the side of his stall, or a sort of barricade that we had constructed and fastened with wire nails, to keep the horse in the next stall from being kicked; but every two or three days we had to drive those wire nails in again, because the continual battering would result in leaving the heads of those nails sticking up from a sixteenth to an eighth of an inch. Unless they were "driven home" occasionally, the whole structure would have tumbled down. But, drive on those nails as much as we would, we could not get the boards to "hug" together tight. We had almost decided to use screws, when the

thought occurred to us that *cut* nails, from their wedge shape, would hold the boards together all right. The experiment was so simple that we tried it at once; and the result was, that that barricade stayed up without any more fussing with it.

The wire-nail catalogues will give you very nice engravings, showing you how the cut nail breaks the wood, and how the wire nail simply passes through the grain, making a nice smooth round hole. All this is true to a certain extent; but as a cut nail is wedge-shaped, the further it is driven into the wood, the more it *draws;* and when it is driven clear up to the head, the broken parts of the wood are wedged up tightly against the surface of the nail; and as soon as a hammer is applied to draw the nail out, the particles of wood lying against the nail begin to assume their former position, but can not, as they now have the nail to press against; and the harder the nail is pulled, the tighter these bits of wood bind, until the hammer forces them from their position; and this pressure is made much harder, it should be remembered, by the greater roughness of the cut nail as compared with the wire.

If, for any reason, a couple of boards are sprung apart, wire nails will fail to *draw* them together; but a cut nail will make them "hug." Now, the point is right here: That for bee-hives of ⅞ lumber (it doesn't matter so much with Dovetailed hives) we want a cut nail that will make a tight, close joint—one that will make the edges of the board hug together. On account of the danger from splitting, a wire nail is better for ⅜ hive lumber. Wire nails are also better for use in crating; they are nicer for finished and all small work; and those not accustomed to nail-driving can generally use them with better success; they are also cheaper; but in the hands of a person more or less expert, the cut nails for bee-hives of ⅞ inch boards will be found to be better. The wire nail, although it pulls all the way, *starts* easily. A cut nail starts very hard; but when once started it comes easily—easier than the wire nail, as it pulls or binds on only *two* sides. Practical carpenters will not allow wire nails to be used in sheeting houses, for that very reason. They want a nail that starts hard. If it starts hard, it probably will never start.

TRY IT, AND SEE WHETHER IT IS ALL RIGHT.

There is a certain kind of lack of faith, or, to call things by their proper name, there is a certain kind of *stupidity* about humanity that vexes me more than almost any thing else. When I sat down behind the bench, and used to repair watches, years ago, every little while a watch would be sent to be repaired, when it simply needed winding up. Sometimes the owner had come quite a distance, or had sent his watch by his neighbor, with the statement that it would not *go*. I got so used to this that I always applied the key the very first thing, to see whether the owner had not forgotten to wind his watch. Year after year this same state of affairs kept going on. Sometimes the owner would almost get mad, he was so sure he had wound it at the regular time. Frequently I would hand it back to him, with a remark something like this: "Here, my good friend, just take your key and wind it yourself. Perhaps you will then be convinced." I suppose watch-repairers are having the same thing to contend with, even now. But it is not alone the case with watches. Last week the cook informed me that she had no place to pour her slops and dishwater. Then she explained that she had been carrying them quite a distance through an adjoining room to a sink in the wax-room. Some repairs in the latter cut this off. Right by her cooking-stove is a sink with a proper trap, that was put in years ago, at considerable expense. I asked her why she did not use it, and she said it had been stopped up for the past two years. "Why, my good friend, you don't mean you have been lugging all your slops into the wax-room for two years past?" She admitted that she had done so. This morning I got the plumber, with wrenches and tongs, and instructed him to take up the whole structure, and make it work, no matter what it cost. Now, he, like the jeweler, had probably learned to try things, and *see*, before he decided they wouldn't work. He called for a pail of boiling water, and, lo and behold! it went out in a twinkling. Another and another followed, and the cook was obliged to admit that there was no obstruction whatever. Long ago it *did* stop up, and she had to dip her slops out again. I can not find out why I was not informed of the matter promptly. Perhaps they thought I had too much care and worry. Some time ago an adjoining sewer-pipe was flushed very thoroughly with steam and hot water, and this likely cleansed out also the pipes of the kitchen-drain; but she had got it into her head that it would not work, and so she never tried it any more.

A few minutes ago the vegetable-wagon was standing before the door, in a zero wind, while the driver lugged from somewhere a pail of water for the horse. The horse stood close to the hydrant. "Why, what in the world are you stopping to carry water for, boys? Isn't that hydrant all right? Have you tried it?" Why, no, they hadn't tried it, but they supposed it was frozen up. I had been wondering why folks were not using our watering-trough lately; and I then remembered that, last week, while we were putting in the pipes to the greenhouse, the water was shut off from that hydrant an hour or two. Somebody started the report that it was frozen up, and no one had tried it since. In the same way, a slanderous report starts about a neighbor. It is passed around from mouth to mouth, and everybody believes it. If you should say to one of them, "Why, my friend, the idea is preposterous; have you asked Mr. A about it?" the reply would probably be, "Why, no; I have not said any thing to *him* about it. But everybody says it is so, and I guess it is."

Go straight to the man himself, and he will explain to you in a minute that it was simply a great blunder, started, probably, because somebody jumped at conclusions. Now, then, before you say the sink won't work, or the hydrant won't work, or that your watch or clock will not go, or that your neighbor has turned rascal, do, for Heaven's sake, take the trouble to see whether it is true, or only a notion that you and other people have got into your heads.

A. I. R.

THE WASHINGTON CONVENTION.

We have just returned from the Washington convention. While the attendance was not very large, the quality and high character of the discussions was of the very best. We were honored with the attendance of four government officials — Hon. Edwin Willitts, the Assistant Secretary of Agriculture; Prof. Wiley, Chief Chemist; Dr. Riley, Entomologist; and Frank Benton, an assistant. The addresses from all four were listened to with marked attention, and we hope to give a report of them in our next. We had the pleasure of a personal interview with Prof. Wiley, the chemist whom the bee-journals have so severely criticised. We find that he is not only an able chemist, but a pleasant gentleman. We surely have misunderstood him in the past.

THE GREEHOUSE, UP TO THE TIME OF GOING TO PRESS. DEC. 31.

THAT automatic greenhouse ran itself all the while we were gone to Washington—Monday night till Friday night—even though the temperature was down near zero the greater part of the time. Not a valve was moved nor a ventilator opened. The accumulated heat in the ground and hot-water pipes did the business.

SPECIAL NOTICES.

EARLY-ORDER DISCOUNTS.

During this month the discounts for early orders is 3%, applying to pages 10 to 30 of our catalogue.

WIRE NETTING AND FENCING.

We have secured 98 rolls assorted widths of 3-inch No. 19 and No. 20 netting, which we can furnish, as long as it lasts, at the prices given in the table, page 829 of the Nov. 15th No. of GLEANINGS. Shipments will be made from here. We will also extend till March 1st the special prices on 2-inch No. 19 netting we made for shipment from here, which for 2-inch No. 19, 4 ft. wide, were $3.50 per roll; 5 rolls, $17.00; 10 rolls, $33.00; 25 rolls or more, $3.20 per roll.

ANOTHER CARLOAD ORDER.

We have shipped to W. O. Victor, of Wharton, Texas, a carload of bee-keepers' supplies, comprising 10-frame two-story Dov. hives for comb and extracted honey, shipping-cases, extractors, smokers, honey-knives, bee-brushes, sections, cartons, etc. Any bee-keeper in that vicinity will do well to get his prices. We are planning to send a carload, comprising a general line of supplies, to St. Paul, Minn., where they will be sold at our prices. Any of our readers in that section who are interested would do well to correspond with H. G. Acklin, 1024 Mississippi St., St. Paul, with a list of what you need.

SPECIAL PRICES ON SECTIONS EXTENDED.

We extend the special prices on sections mentioned in the Nov. 15th number, through this month and next, unless previously recalled. The prices are for sections 4¼ square, and either 1$\frac{15}{16}$, 1$\frac{13}{16}$, 1¾, 7 to foot wide, open top and bottom, and No. 1 white in quality. The special prices are $2.50 for 1000; $7.00 for 3000; $11.00 for 5000; or, $20.00 for 10.000. These prices do not apply to the regular size 1⅞ wide, nor to the other widths after our surplus is gone. We have besides, No. 1 cream, 1$\frac{15}{16}$ and 1⅞ wide and 4¼ square, at $2.00 per 1000; $9.00 for 5000; $17.00 for 10,000, while they last.

A NEW BOOK—THE ICE CROP.

The O. Judd Co. have just given us a nice little volume, full of pictures, answering almost every question that could possibly be asked in regard to fixing ice-ponds, cutting and putting away the ice, and saving it through summer time. First they talk about the ice industry, then in regard to the legal ownership of ice-fields; also sanitary matters. They tell how to scrape off the snow most expeditiously; give cuts of all the tools used in the great ice-fields, and others, such as farmers might want on their farm. Then they tell about ice-houses, from a little box in the barn, up to the great big ones; what is ice good for? how to make ice-cream, lemon ice, and lots of other things that take the nickels unless we make them at home with our own cream and our own ice. The book contains 122 pages, 16mo, cloth, $1.00. We can furnish it at the above price.

KIND WORDS FROM OUR CUSTOMERS.

Our advertisement in GLEANINGS the past season has paid us very well. The ones for the mismated queens brought orders thick and fast from far and near. We had to return some orders. It was impossible to fill them all. The one for tested queens did as well as we expected.
Decatur, Miss. CLEVELAND BROS.

The Cowan extractor is a gem. Frail! no one would think of such a thing after seeing it; and the gearing and frame run very true. The workmanship is thorough. ALBERT C. BULL.
Chester, N. Y.

The 5½ lbs. of GLEANINGS paper arrived O. K., and just fits my type-writer. I am well pleased with it. I had forgotten that I had a credit on your books until the bill for the paper came. I tell you, it is nice now to write copy on this long smooth GLEANINGS paper. A merry Christmas and a happy New Year to A. I. Root, the Home of the Honey-bees, and all its helpers. JENNIE ATCHLEY.
Greenville, Texas, Dec. 24.

BEE-KEEPERS' SUPPLIES. Before placing your order for supplies send for our illustrated catalog. We are making the best goods at lowest prices.
E. H. TRUMPER, Bankers, Mich.

PATENT WIRED COMB FOUNDATION
HAS NO SAG IN BROOD-FRAMES.
THIN FLAT - BOTTOM FOUNDATION
Has No Fish-bone in Surplus Honey.

Being the cleanest is usually worked the quickest of any Foundation made.
J. VAN DEUSEN & SONS,
Sole Manufacturers, 5tfd
Sprout Brook, Montgomery Co., N. Y.
Please mention this paper.

VANDERVORT COMB-FOUNDATION MILLS.
Send for samples and reduced price list.
1tfd **JNO. VANDERVORT, Laceyville, Pa.**

Barnes' Foot-Power Machinery.

Read what J. I. PARENT, of CHARLTON, N. Y., says—"We cut with one of your Combined Machines last winter 50 chaff hives with 7-inch cap, 100 honey-racks, 500 broad frames, 2,000 honey-boxes, and a great deal of other work. This winter we have doubled the amount of bee-hives, etc., to make, and we expect to do it all with this saw. It will do all you say it will." Catalogue and Price List free. Address W. F. & JOHN BARNES, 545 Ruby St., Rockford, Ill.
When more convenient, orders for Barnes' Foot-Power Machinery may be sent to me. A. I. ROOT.
23tfd

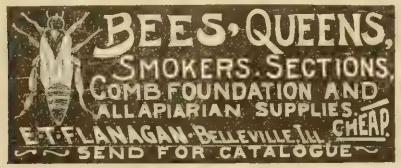
Maple Sugar and The Sugar-Bush
BY
PROF. A. J. COOK,
AUTHOR OF THE
BEE-KEEPER'S GUIDE, INJURIOUS INSECTS OF MICHIGAN, ETC.
The name of the author is enough of itself to recommend any book to almost any people; but this one on Maple Sugar is written in Prof. Cook's happiest style. It is
OFUSELY ILLUSTRATED,
And all the difficult points in regard to making the very best quality of Maple Syrup and Maple Sugar are very fully explained. All recent inventions in apparatus, and methods of making this delicious product of the farm, are fully described.
PRICE: 35 Cts.; by Mail, 38 Cts.
A. I. ROOT, Medina, O.

SAFE, DURABLE FENCE; ONLY $80 PER MILE.
LAND-OWNERS save one-half the cost avoid dangerous barbs
Agents make $200.00 per month and expenses **Cash**
The best local and traveling agents wanted everywhere. Write at once for circulars and choice territory; address A. G. Hulbert, Patentee, care of Hulbert Fence & Mfg. Co. Manufacturers. 904 OLIVE STREET, St. Louis, Mo.
Factory Catalogue with 200 engraved designs and prices, sent free to any who want fancy iron and wire work or city, cemetery and farm fences, etc.

In writing to advertisers please mention this paper 21 20db

300—FLORIDA
LEATHER-BACK ITALIAN QUEENS.

By my special method of harvesting a crop, in the "*migratory*" system, I shall have 300 *tested* queens for delivery about March 20th. $10 per dozen. *None are over 6 months old.* My crop the past season from one yard of 42 colonies, spring count, was 10,800 lbs., and increase to 150. **A. F. BROWN,**
HUNTINGTON, PUTNAM CO., FLA.



Cheap Sections! As we want to close out Sections carried over at $2.00 per thousand. Address
J. B. MURRAY, Ada, Ohio.

☞In responding to this advertisement mention GLEANINGS.

800 FERRETS, a fine lot of **Scotch Collie Pups** and a trained bird-dog for sale. Price list free. **N. A. KNAPP, Rochester, Lorain Co. Ohio.**
18tfdb

TAKE NOTICE!

BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH,
14tfdb New London, Wis
Please mention this paper.

ROOT'S DOVETAILED HIVES and BEE SUPPLIES FOR SALE
W. K. BALL,
Box 483, Reno, Nevada.

SECTIONS.

$2.50 to $3.50 per M. Bee-Hives and Fixtures cheap. NOVELTY CO.,
6tfdb Rock Falls, Illinois.
☞In responding to this advertisement mention GLEANINGS.

Eastern Supply House.

We furnish every thing used in the apiary, and at bottom prices. Illustrated circular free.
I. J. STRINGHAM, 92 Barclay St., N. Y.
21-20db Please mention this paper.

Muth's
Honey-Extractor.

Square Glass Honey-Jars,
Tin Buckets, Bee-hives.
Honey-Sections, &c., &c.
Perfection Cold-Blast Smokers.

APPLY TO
CHAS. F. MUTH & SON, Cincinnati, O.

S.—Send 10-ct. stamp for "Practical Hints to Bee-keepers."
Please mention this paper.

BUFFALO, N. Y. BATTERSON & CO. Commission Merchants. 18tfdb **Unsurpassed Honey Market. Responsible, Reliable, and Prompt.**

SAVE MONEY.—Send to J. P. H. Brown, Augusta, Georgia, for his price list of supplies. Hives and foundation at wholesale rates. 4tfdb

HATCH CHICKENS BY STEAM
WITH THE IMPROVED
EXCELSIOR INCUBATOR.

Lowest priced First class Hatcher made.

Thousands in Successful Operation. *SIMPLE, PERFECT, and SELF-REGULATING.* **Guaranteed** to hatch a **larger percentage** of fertile eggs, at **less cost**, than any other Incubator. Send 6c. for Illus Catalog. Circulars Free.
GEO. H. STAHL, Pat. & Sole Mfr., Quincy, Ill.

☞Please mention GLEANINGS. 22 9db

A Four-Color Label for Only 75 Cts. Per Thousand.

Just think of it! we can furnish you a very neat *four-color* label, with your name and address, with the choice of having either "comb" or "extracted" before the word "honey," for only 75 cts. per thousand; 50 cts. per 500, or 30 cts. for 250, postpaid. The size of the label is 2½x1 inch—just right to go round the neck of a bottle, to put on a section, or to adorn the front of a honey-tumbler. Send for our special label catalogue for samples of this and many other pretty designs in label work.
A. I. ROOT, Medina, O.

THE BEE-KEEPERS' UNION: A FEASIBLE METHOD PRESENTED FOR THROTTLING THE EVILS RESULTING FROM THE ADULTERATION OF HONEY.

The following, from the General Manager of the Bee-Keepers' Union, will explain itself:

For several months there has been much discussion in the bee-periodicals, about the Union assuming new functions. As no one is able to say whether it shall or shall not do so, it is now proposed to submit it to a vote.

In order to act in a legitimate manner, here comes a motion from one of the Vice-Presidents. It explains itself:

"MR. THOS. G. NEWMAN,
General Manager of the Bee-keepers' Union:

"I move you that the scope of the National Bee-keepers' Union be enlarged, so as to include prosecutions, looking to the prevention of the adulteration of honey.

"Yours truly, A. J. COOK."

This has been seconded by Mr. Ernest R. Root, and supported by a number of other members.

In order to submit it to the members, I have prepared an amended Constitution, sufficiently broad to allow of the proposed new functions and any others which may hereafter come up. It vests in the Advisory Board the power to act on any matter in the interest of the pursuit of bee culture, presented to the Union for its action. In this way immediate work can be done without waiting for a full vote of the membership. Of course, care must be taken to put into office its best and most reliable members (a good selection can be made from the list of names attached to this Report, and such only are eligible to office).

I desire that this matter should receive due consideration and would ask every member to vote. Let there be no spaces unfilled when you return the "Voting-Blank," to be exchanged for a Membership Certificate.

The only changes in the Constitution submitted are in Articles IV. and VI Please read these carefully, and then vote FOR or AGAINST, as you deem for the best interests of the Union.

If the amended Constitution is adopted (it takes a majority vote to do so), then the duties of the General Manager will be greatly enlarged, and it is nothing but *just* that he should have a salary. I would suggest that it be decided to make that salary 20 per cent of the gross income of the Union for each year — whatever that may be.

Some have stated that it was a mistake not to have done this at the start, and perhaps it was. This matter can, however, be adjusted now, and it is therefore submitted to a vote *when* such salary should commence.

A little further on, the General Manager very modestly writes this:

Now comes the most difficult part of my report. I have repeatedly stated that I ought to retire, and give place to a younger man, but the appeal comes to me from so many members not to think of such a thing, at least for the present, that I have called a halt,— to let "feelings" consult with "judgment" as to my *duty* in the matter.

In order that the reader may act intelligently, we will review the situation:

On page 610 of our issue for Aug. 15, Mr. J. F. McIntyre, having in view the extent to which honey is now adulterated, expressed a wish that bee-keepers, when they met in Washington, would organize another union, for the express purpose of fighting the evil. He believed that such a union would have ten times the strength of the old one, because they would all be interested in a matter that seemed to threaten the very foundations of the honey industry. At the time, it seemed to us it would be more feasible and economical to modify the constitution of the *existing* Bee-keepers' Union, and this view was later shared by Prof. Cook, in the *American Bee Journal*. The old Union has been a magnificent success, and, under the old leadership of Mr. Newman, we felt sure that, by enlarging its scope a little, it would be able to do a tenfold greater and more important work. Bee-keepers are vastly more interested in the annihilation of the evils resulting from the adulteration of honey, on account of which the price of the honest product has gone down, so that ten times the number would come forward with their dollars and sustain such a union.

The old (or existing) Union, with its present constitution protects its members only against neighbors who force them into court by claiming that their bees are a nuisance; and while it has done a grand work in establishing valuable precedents in law, its scope is so narrow that very few bee-keepers, comparatively, think they can afford to become members; for most of them have such good neighbors of whom they have no fears. While there are a hundred bee keepers who feel the need of protection under the *old* constitution, there will be a thousand who will come to the support of the Union with its *new* constitution.

WHY THE UNION WITH NEW FUNCTIONS IS NECESSARY.

A few years ago adulteration was not practiced enough to make any special action on the part of bee-keepers necessary; but now that we have had a series of four or five bad seasons, the pure article has become very scarce, and dishonest dealers have begun to piece it out, by adding a certain per cent of glucose. In the light of some facts that have come to our knowledge, and which we are not at present in position to set before the bee-keeping world, we must admit that the evil is growing under our inaction and silence, and will continue to grow, unless bee-keepers wake up and take some definite and decisive action at once. The fact that the price of honey fails to go up, in obedience to the law of supply and demand, is significant; and it seems to us that it is the duty of *every bee-keeper*, who depends largely upon the sale of honey for his bread and butter, to enroll himself at once by the payment of a dollar, voting "yes," and filling out the blank on the other side; fold this sheet up and inclose it in an envelope and send it to Thos. G. Newman, 147 South Western Avenue, Chicago, Ill.

We have done in the past what we could to warn those, whom we suspected of adulterating, to be a little careful; but it was impossible to do the *effective* work that a bee-keepers' union, armed with a good salaried officer, and two or three thousand dollars in its treasury, could do. The mere fact that such a union was existing, and that bee-keepers would everywhere report suspected cases to this union, would make the business of adulterating exceedingly risky.

With regard to the General Manager, we would say that Thomas G. Newman is emphatically the right man, and in view of the brilliant success of the old Union—and Mr. Newman was its backbone and sinew—no one, we feel sure, would think of voting for any one else.

Without wishing to disparage the capacity of Mr. James Heddon, the President, we would suggest that, as he is not of the legal fraternity, the Hon. R. L. Taylor, a good lawyer and bee-keeper, be elected in his place. While Mr. Newman is possessed of good legal knowledge, it will be of great advantage to him to be in direct consultation with the next chief officer of the Union.

As to a salary of 20 per cent of the gross income to the General Manager, it seems to us there is nothing unreasonable in that. Good men, to do good work, must be remunerated.

National Bee-Keepers' Union.

MEMBER'S VOTING BLANK.

Officers for 1892. President, James Heddon. Vice-Presidents, G. M. Doolittle, A. J. Cook, A. I. Root, G. W. Demaree, C. C. Miller. Manager, Secretary and Treasurer, Thomas G. Newman.

The Constitution, as it is proposed to Amend it.

ARTICLE I.—This organization shall be known as the "National Bee-Keepers' Union," and shall meet annually, or as often as necessity may require.

ARTICLE II.—Its object shall be to protect the interests of the Bee-Keepers, and to defend their rights.

ARTICLE III.—The Officers of this Union shall consist of a President, five Vice-Presidents, and a General Manager (who shall also be the Secretary and Treasurer), whose duties shall be those usually performed by such officers. They shall be elected by ballot, and hold their several offices for one year, or until their successors are elected; blank ballots for this purpose to be mailed to every member by the General Manager.

ARTICLE IV.—The Officers shall constitute an Advisory Board, which shall determine what course shall be taken by this Union, upon any matter presented to it for action; and cause such extra assessments to be made upon the members as may become necessary; provided that only one assessment shall be made in any one fiscal year, without a majority vote of all the members (upon blanks furnished for that purpose), together with a statement showing why any other assessment may be required.

ARTICLE V.—Any person may become a member by paying to the General Manager an Entrance Fee of ONE DOLLAR, for which he shall receive a printed receipt, making him a member of the Union, entitled to all its rights and benefits. The Annual Fee of $1.00 shall be due on the first day of January in each year, and MUST be paid within six months in order to retain membership in this Union.

ARTICLE VI.—The Funds of this Union shall be used for any purposes in the interests of the pursuit of bee culture, when such are approved by the Advisory Board; and to pay the legitimate expenses of this Union, such as printing, postage, salary of the Manager, clerk-hire, etc.

ARTICLE VII.—This Constitution may be amended by a majority vote of all the members at any time.

How to Become Members.

The entrance fee is $1.00, and that pays for the dues of any portion of the unexpired calender year, ending Dec. 31. Then it costs $1.00 for annual dues, which are payable every New Year's day, and must be paid within 6 months, in order to retain membership. If membership ceases, then all claims against former members also cease; and all claims to the protection of the Union are dissolved.

To **Thomas G. Newman,** General Manager,
147 South Western Avenue, **Chicago, Ills.**

I enclose **$1.00** for Annual Dues to December 31, 1893, and my Ballot for Officers for the ensuing year, which you are requested to record, as follows:

For President .....

For Five Vice-Presidents ..... | ..... | .....

For General Manager, Secretary and Treasurer .....

Amendments to Constitution—Yes—No [Cross off one word.]

Salary of Manager—20 ..... *per cent of gross Income of current year, to begin on January 1, 18* _____ Here write any year after 1885, when the Union was organized.

Sign here .....

P.O ..... *County* ..... *State* .....

☞ **Be sure to fill all the blank spaces.** ☜

☞ This Blank must be filled up and returned (with $1.00) before January 31 93, or the Vote will be lost.

Fill Out this Blank. See Other Side.

Root's Goods for the West.

Bee=Keepers of the West

Should remember that we have established at Des Moines, Iowa, a **WESTERN BRANCH** where a **full** line of Bee-keepers' Supplies are kept for sale. You can save time and freight by ordering from our Western Branch. We have engaged Jos. Nysewander to take charge of this business, who will give all orders good, careful, and prompt attention. Send for his price list for '93. Address

Joseph Nysewander, Des Moines, Iowa.

FOR ALL KINDS OF BEE KEEPERS SUPPLIES. ADDRESS LEAHY MFG. CO. HIGGINSVILLE MO.

In writing advertisers please mention this paper. 2ltfdb

DOVETAILED HIVES, SIMPLICITY HIVES,

SECTIONS, EXTRACTORS, ETC.

FULL LINE OF

BEE-KEEPERS' SUPPLIES.

60-PAGE CATALOGUE. 1tfdb

J. M. JENKINS, WETUMPKA, ALABAMA.

☞In responding to this advertisement mention GLEANINGS.

ROOT'S GOODS FOR THE EAST.

Bee-Keepers of the East should

Bear In Mind that we have established at Syracuse an **Eastern Branch**

where our Bee-keepers' Supplies are kept for sale, and prompt shipment. You can save time and freight by ordering from our Eastern Branch. We have engaged Mr. F. A. Salisbury to take charge of this business, and he will treat you well. He will be pleased to send you a list of goods kept in stock.

Address all orders.

EASTERN BRANCH, F. A. SALISBURY, Agent, Syracuse, N. Y.

Bee-Hives.

Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue.

W. H. PUTNAM, River Falls, Pierce Co., Wis.

☞In responding to this advertisement mention GLEANINGS.

FOR SALE. Nineteen colonies brown bees, in movable-frame hives. Most of them hung on improved Hoffman frames. Contain now honey enough to pay for some. Will sell for $3.00 per colony, as they stand, if taken at once.

JOHN DAVIS, Garland City, Ark.

For Sale. One Given foundation-press, good as new; very cheap. Address

1-2-3 H. D. EDWARDS, Delhi, Ill.

Interesting Monthly for

The Family and Fireside

Welcome in every Home.

—o—

Large Premiums for Clubs.

Sample Copy sent Free.

—o—

THOMAS G. NEWMAN,

147 South Western Ave.,

CHICAGO, - - ILLS.

Please mention this paper.

FALL Eggs and Plants, Fowls, Poultry-books and Papers; finely ill. circular free. Address GEER BROS., St. Marys, Mo., Or, H. B. GEER, Nashville, Tenn.

14tfdb

Please mention this paper.

PENNSYLVANIA EXHIBIT

At the World's Fair in Chicago.

All Bee-keepers of Pennsylvania interested in the success of the Honey Exhibit of the State at Chicago, will please communicate with the undersigned for particulars.

F. HAHMAN, Sec. Philadelphia Bee-keepers' Association,
Harrowgate Lane, 33d Ward, Philadelphia, Pa.

BEE-KEEPERS' SUPPLIES. Before placing your order for supplies send for our illustrated catalog. We are making the best goods at lowest prices.
E. H. TRUMPER, Bankers, Mich.

DEAR
BEE-KEEPING
FRIENDS:

I shall be glad to book your orders, for what queens you may wish, for early spring or summer delivery. Prices for untested, February, March, April, and May, $1.00 each; six, $5.00, or $9.00 per dozen; June and after, 75c each; $4.25 for 6; or $8.00 per dozen; 100 tested three-banded queens, $1.50 each, for early shipment. Prices for breeding-queens on application.

Remember, I breed both the three and five banded Italians at above prices. My queens give satisfaction, judging from the many testimonials, from nearly three thousand sold in 1892. Safe arrival and satisfaction guaranteed. Also Hives and Supplies low.

JENNIE ATCHLEY,
Greenville, Hunt Co., Texas.

HEDDON'S
SUCCESS
—IN—
BEE CULTURE.
PRICE 50 CTS.

EXTRACTED
HONEY
PRICES LOW.

Send address for circular to
JAMES HEDDON,
DOWAGIAC, MICH.
Please mention this paper.

Basswood Trees.

I can furnish a few basswood-trees from 3 ft. up. Prices:

3 ft.....8c each; 4 ft .....10c each.
4½ ft.....12c " 5 ft.....15c "

NELSON HANER,
CEDAR CREEK, WASH. CO., WIS.

WANTED.—To exchange for cash or offers, a complete outfit for making bee-hives, Root's 2 H. P. expansion engine, all in good order. Must sell. Write quick for particulars. A. B. HERMAN, Lock Box J, Burnett's Creek, White Co., Ind.

FOR SALE. About 1700 lbs. of pecan nuts. Samples sent to any one making an offer. 24d
2-7db R. A. JANSEN, Wharton, Tex.

Berries.

Friends, I can furnish you with all kinds of berry-plants at about one-half the usual price. Plants warranted. Bank references. Satisfaction guaranteed. 6tfdb
Address EZRA G. SMITH, Manchester, N. Y.

Don't Forget

to send for our 1893 circular. Dovetailed hives, Sections, Bee Supplies, etc. *J. NEBEL & SON,*
2tfdb *HIGH HILL, MO.*

CHAFF HIVES.

I offer special inducements to those who will sell my hives. Send for terms. J. A. ROE, Union City, Ind.

BEE-HIVES AND SUPPLIES.

Send for catalogue free. Address **SAMUEL JONES,** Highland Park College, Des Moines, Iowa. 1-19db

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FOR SALE **250** COLONIES FINE ITALIAN **BEES**
IN DOVETAILED HIVES, $4.00 EACH.
Lots of 20 or more, special prices on application.
2tfdb *MRS. PAUL B. LEEDS, AVERY P. O., LA.*

HUNT'S FOUNDATION FACTORY.

Send for **Free Samples** of the **Finest Foundation** and **Sections** made. Special prices and advantages to dealers in Foundation. Send for my new illustrated **Free Price List** of every thing needed in the apiary. M. H. HUNT, Bell Branch, Mich.
2tfdb Please mention this paper.

---

14 Railroads

to carry the goods we manufacture to all parts of the country. Can cut any hive ordered. Langstroth improved Simplicity a specialty. All kinds of Bee Supplies, Queens and Bees. Light and dark colored Ferrets. Send for price list.
R. E. HARBAUGH,
2tfdb *25th & Clay Sts., St. Joseph, Mo.*
Please mention this paper.

"Quigley's Golden Queens"

are bred for business; try one. Circular of Queens and Bee Supplies ready Feb. 1st. Send for it, and a free sample copy of the

PROGRESSIVE BEE-KEEPER.

Address **E. F. QUIGLEY,**
2tfdb **Unionville, Mo.**

TO CANADIAN BEE-KEEPERS:

C. A. OUELLETTE,

MANUFACTURER OF ALL KINDS

APIARIAN + SUPPLIES.

DOVETAILED HIVES, SECTIONS, AND FRAMES A SPECIALTY.

Write for my new catalogue, which names references.

C. A. OUELLETTE,
TILBURY CENTER, ONT., CAN.
In writing to advertisers please mention this paper.

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HONEY COLUMN.

CITY MARKETS.

CINCINNATI.—*Honey.*—Demand from manufacturers for extracted honey was slow for the last few weeks; while there was and is still a good demand from consumers for family use. There is no choice comb honey in our market. Best white brings 14@16 in the jobbing way. Extracted honey sells at 6@8 on arrival. *Beeswax*, demand fair at 23@25 on arrival for good to choice yellow.
CHAS. F. MUTH & SON,
Jan. 9. Cincinnati, O.

CLEVELAND.—*Honey.*—Honey offered by N. Y. parties, No. 1, F. O. B. Cleveland, O., 14; No. 2, 10. Demand not as good as before holidays. *Beeswax*, as reported before. WILLIAMS BROS.,
Jan. 7. 80 & 82 Broadway, Cleveland, O.

SAN FRANCISCO.—*Honey.*—Extracted is getting very scarce, and there is not enough left to supply the local demand. We quote: 6½@7½, according to quality. Comb honey is also scarce, and it is selling at 12½@13½. *Beeswax*, in light stock, quotable at 23@24. SCHACHT, LEMCKE & STEINER,
Dec. 24. San Francisco, Cal.

NEW YORK.—*Honey.*—The market is rather quiet, being right after the holidays; it may revive some after Feb. 1, '93. We quote prices as follows: Fancy, 1-lb. clover, 15@16; 2-lb., 12@13; Fair, 1-lb. clover, 12@13; 2-lb., 10@12; buckwheat, 1-lb., 10@11; 2-lb., 9; extracted, clover, 8½@9; mixed, 7@7½; buckwheat, 5½@6½. *Beeswax*, 26@27. CHAS. ISRAEL & BRO.,
Jan. 9. New York.

CHICAGO.—*Honey.*—The demand for fine grades of comb honey is satisfactory, and brings 17@18; any thing falling below that is slow of sale, and prices uncertain. Ranging from 13@16. Extracted remains steady with fair supply. *Beeswax*, 20@25.
R. A. BURNETT,
Jan. 7. 161 So. Water St., Chicago, Ill

DETROIT.—*Honey.*—Comb honey continues to be quoted at 13@14; No. 1 white would bring 15. Extracted, 8@8¼. *Beeswax*, 26@27.
Jan. 9. M. H. HUNT,
Bell Branch, Mich.

KANSAS CITY.—*Honey.*—The demand for extracted is good, supply light, especially white. We quote: Comb, 1-lb., No. 1 white, 16@17; No. 2 white, 14@15; No. 1 amber, 15@16; No. 2 amber, 10@12.
Beeswax.—22@25 cents.
CLEMONS-MASON COM. CO.,
Jan. 9. Kansas City, Mo.

ST. LOUIS.—*Honey.*—Comb slow; white-clover, 17@18; dark, 7@10. Extracted, scarce and in demand, at 6½@6¾ in barrels; 7¼@7¾ in cans. *Beeswax*, prime, 24½.
Jan. 9. D. G. TUTT GRO. CO.,
St. Louis, Mo.

NEW YORK.—*Honey.*—The demand for comb honey is very limited; and, while fancy stock is well cleaned up, the market is well stocked with off grades—white and buckwheat—and prices are irregular. Extracted is in good demand, and stocks are light. We quote: Basswood and white clover, 8@8½; buckwheat, 6@6½; Southern, 70@75 per gallon. *Beeswax* dull at 25@27.
HILDRETH BROS. & SEGELKEN,
Jan. 11. 28 & 30 West Broadway, New York.

BUFFALO.—*Honey.*—Fancy bright honey is in light supply, liberal demand for mostly 16c for 1-lb. sections; second grades more plentiful, ranging from 12@14; buckwheat is dull at 9@10.
BATTERSON & CO.,
Jan. 9. 167, 169 Scott St., Buffalo, N. Y.

KANSAS CITY.—*Honey.*—There is no change in the honey-market; stocks are fairly large with a good demand. White 1-lb., 16@17; No. 2, 15; dark, No. 1, 13@14; No. 2, 12; extracted, 7@8. *Beeswax*, none on hand. HAMBLIN & BEARSS,
Jan. 9. 514 Walnut St., Kansas City, Mo.

FOR SALE.—Well-ripened extracted honey in 60-lb. cans. Sample free. J. G. LEHDE,
Gardenville, Erie Co., N. Y.

FOR SALE.—Three bbls. and twelve 60-lb. cans fine Spanish-needle honey. EMIL J. BAXTER,
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WANTED.—A man to handle my bees. 2d
FILMORE COLE, Box 419, Lima, O.

WANTED.—A good young man to do general farm-work. I will pay $300 per year. Reference, the Larimer Co. Bank of Loveland, Colo.
J. B. SWAN, Loveland, Larimer Co., Colo.

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2d ELIAS FOX, Hillsborough, Wis.

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GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
PUBLISHED BY A. I. ROOT
$1.00 PER YEAR MEDINA OHIO

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STRAY STRAWS

FROM DR. C. C. MILLER.

DADANT first gave the idea of soaking combs before melting.

I STAND UP to be counted with W. C. Frazier as strong for the top-bar ⅞ thick.

AND NOW the question in England is, whether a pound bottle shall hold 14 or 16 ounces.

THE LAST *Review* is unusually good, having a short but delightful autobiography of the editor.

THAT PLAN of sulphuring through a pipe in the cellar, as given by friend France, on p. 19, is capital.

"I FIRMLY BELIEVE that the house-apiary is to be the Mecca in the new dispensation in bee-keeping," says B. Taylor, in *Review*.

DID YOU HEAR the screaming at our house two weeks ago? It wasn't any one being killed; it was only the folks laughing at Wilder's plaint.

CONDUITE DU RUCHER, the excellent French book of M. Bertrand, has been published in German, and a Flemish edition is now in press, as also one in Russian.

ILL HEALTH is given as the reason for giving up bees in two separate instances in *A. B. J.* Why, friends, bee-keeping is just the thing "for invalids and women."

HUTCHINSON says the last few years have been trying ones to bee-keeping, and that he has been surprised to learn of so many who have gone out of the business.

AN HISTORICAL ALBUM is what the *American Bee Journal* proposes to be the present year, by publishing each week "a biographical sketch, with portrait, of some prominent bee-keeper."

IT LOOKS STRANGE to see in the *British Bee Journal* instructions given for making the old-fashioned straw skeps. I doubt whether one in twenty of the readers of GLEANINGS ever saw one.

DOOLITTLE's a philosopher. In *Review* he says, "Would you deprive your children of the keen enjoyment you have experienced in building up a home of your own, by giving them one already built?" His philosophy is good too.

A SECOND SWARM is mentioned in a foreign journal, in which, upon hiving, the queen showed the usual signs of fecundation, and the assurance is given that no mistake could be made, as though such a thing was very unusual. I had supposed it of frequent occurrence. How is it?

THE FRENCH have heretofore imported their sections from this country; and they now announce, as a great step forward, that they have sections made in France, of French wood, equal to the American product. M. Daujat, Montagna, is the manufacturer.

"OWNING UP when I see that I am wrong," Hutchinson counts among his sweetest pleasures; and I believe Hutch is that sort of man. "Owning up" is a rather bitter pill for most of us, but it leaves a sweet taste in the mouth afterward.

HEDDON THINKS adulteration has done bee-keepers no harm, but the talk about it has done harm, and Hutchinson agrees in the latter part. Possibly some day it may be said that sugar honey never did any harm, but the talk about it did.

"BEES STORE far more rapidly when not divided off into small clusters as they are in sections," says *B. B. J.* I think that is the general belief, but some think differently, and some definite experiments to settle the matter positively would be a good thing.

DOOLITTLE has just let it leak out in *Review*, that he has been running an out-apiary for three years. Bad Doolittle to keep us so long in the dark. He favors comb honey in the home apiary, and extracted in out-apiaries, leaving the honey all on at the out-apiaries till the season is over.

WHEN PIPING is heard in a hive, it is the free queen that pipes, and the queen or queens in the cells quahk. Lately I have seen it stated that the queen in the cell calls first, and the free queen pipes in reply. I had supposed, from the few cases I have heard, that the piping comes first, and then the queens in the cells quahk in reply. Which way is correct?

A GOOD DEAL depends on the manner of putting things. When Editor York says the *A. B. J.* is $1.00 a year, it doesn't seem any thing so very remarkable; but when he says that each number of "the old reliable" costs less than two cents, it looks like a pretty good bargain. Come to think of it, isn't there a good bit of reading in this number of GLEANINGS, for only four cents?

A WRITER in the British *Horticultural Times* goes a little further than our friend across the line, and says that not only is the sting used as a trowel, but, through the sting, formic acid gives to honey its peculiar flavor." Presumably a different amount of formic acid is used when bees work on different flowers. Oh, yes! we're getting on in our knowledge of how bees do business.

REV. W. F. CLARKE, in *Review*, tells me that Herr K. Mullenhoff teaches that formic acid is added to honey from the bees' stings, and says,

"I am, therefore, in the good company of an eminent German scientist." It will be next in order for Rev. Mr. Clarke to quote the name of the eminent scientist in whose company he is when he says that the sting is a "trowel with which the bee finishes off and seals the cells."

LE RUCHER, a French bee-journal, with commendable enterprise, is publishing a series of articles giving the most complete history of the section that I have ever seen. Commencing with the crude beginnings of a quarter of a century ago, the various improvements are given, ending with a detailed account of the manufacture as carried on at Medina. The series has now reached that part where the management of sections by the bee-keeper is fully discussed.

LANGSTROTH'S REMINISCENCES.

SLAVERY; A REMINISCENCE OF DR. LYMAN BEECHER.

A brother of my grandmother lived in Petersburg, Va., and, like his sister, cherished in his heart a deep hatred of the institution of slavery. One night the city was alarmed by a man riding on horseback, almost naked, and crying out that the slaves had risen, and were burning and killing all before them. Rising up hastily from his bed, my uncle was preparing himself for resistance when he sank powerless upon the floor. "O my God!" he cried out, "how can I raise my hands to kill those whom I have seen treated worse than the brutes?" As soon as he recovered himself he resolved to kill no one unless in defense of his family. It proved to be only a false alarm, given by a man crazed by drink.

A neighbor of my grandmother, an old maid, slept in a bed on rockers, and had a slave woman to rock her while she slept. The woman became so accustomed to this that she could usually rock quite well, even when asleep; but if the rocking ceased for a moment, her mistress would wake up and lash her with a whip which she kept lying by her side. This woman put her stamp upon the sugar in the bowl, as it went from the table, so that her servants might not help themselves without being detected. A servant, waiting on the table, almost always dodged when approaching her, expecting a blow, just a horse cruelly treated starts when any motion suggests that a blow may be coming.

A neighbor was annoyed by a slave who had several times run away. At last he swore a fearful oath, that, if he ran away again, and was caught, he would chop off his hands. He did run away again, and was caught; and if his master had actually intended to carry out his awful threats, he was deterred from doing so by the agonized apprehensions of his wife. A daughter was afterward born to them, entirely destitute of hands.

For many years I have been painfully sensible that there was too much law and too little gospel in many of the sermons of my Andover ministry. One day a college classmate who was then in the Theological Seminary came to talk with me on this feature of so many of my discourses. He had been talking with one of my oldest deacons, who had sorrowfully recognized this great defect in the sermons of his beloved pastor. I was not offended by the plain talk, but I could not then be made to feel that it was just.

It has always seemed to me, that to no man so much as to Henry Ward Beecher was owing the great change which has taken place in our preaching. When the great Jonathan Edwards was preaching from the text, "Sinners in the hands of an angry God," we are told that one of the preachers who was in the pulpit with him pulled his garment, and said, in a low voice of remonstrance, "O Mr. Edwards! remember that God is a merciful God."

It is written, "Like as a father pitieth his children, so the Lord pitieth them that fear him. For he knoweth our frame; he remembereth that we are dust." These words seem to me to open a window into the very heart of God, so that every father and mother may know from experience how God feels toward his erring children. Is there one child more easily tempted than the others, more ready to fall? Does the parent's heart go out against that child? Does he know it, in all its weaknesses, only to lay more aggravating burdens upon it? No! a thousand times no! Let us never forget how beautifully the Savior illustrates God's love and pity in the parable of the prodigal son.

I once preached from the text, "Not knowing that the goodness of God leadeth thee to repentance." I have no doubt that the tenor of this discourse was molded largely by my recollection of a discourse preached so often in revivals of religion by Dr. Nathaniel Taylor. The good old deacon, in speaking of this sermon, could hardly find words strong enough to express his delight as he opened his whole heart to me and tried to make me see how much more I could do to lead sinners to Christ by preaching oftener on the love and goodness of the heavenly Father.

In the summer of 1836, shortly after my settlement as pastor in the old South Church of Andover, Mass., Dr. Lyman Beecher, in company with the late Thomas Brainard, D. D., so well known as pastor of the old Pine Street Church, Philadelphia, made a visit to Andover to interest the theological students in the religious needs of the great West. As Dr. Brainard was a relative of mine by marriage, they stopped with me at the house of Deacon Amos Blanchard, where I was boarding.

It was soon extensively made known that Dr. Beecher would preach in the old South Church, at an evening service. Some time in the afternoon he called for pen and paper, and desired to be left alone in my study. Teatime arrived, and he was hardly willing to be disturbed long enough to take his supper. The time for the service arrived and he was not ready for it, but told Dr. Brainard and myself to go to the church, which was only a short distance off, and he would join us before the preliminary services were over. Only a verse or two of the hymn before the service remained unsung; the large building was crowded, and I began to be quite nervous, and was just about sending a messenger after the good old father when he made his appearance. Mounting the steps of the pulpit with rapid strides, he was all ready for the sermon. His manuscript was so small as to suggest the times when paper in this country was so costly that economy in its use was practiced, even at the price of precious eyesight.

His text was, "Seek ye first the kingdom of God, and his righteousness." It was a grand sermon, crowded with thought, severe in logic, and fairly blazing with his wonderful illustrations. He swayed his hearers at his will, and it seemed to me I never heard a discourse which appeared to stir more deeply the hearts and consciences of an audience.

When we returned home the doctor said to me, "Now, young man, you know the circumstances under which I wrote the outline of that sermon. Don't for a moment—trusting to what you can do offhand—neglect the time for study and thorough preparation. *In that discourse I boiled down the studies of years.*"

I expressed a great desire to keep the manu-

script as a memorial of his visit, and of his kind and fatherly advice.

"No," he said, "I want that sermon for my own use."

After he left his room the next morning I saw lying upon the floor a sheet of common writing-paper, folded so as to be hardly larger than the palm of my hand, the leaves being fastened together with a crooked pin. Showing it to Dr. Brainard I said, "I feel strongly tempted to secrete this paper, but I suppose it must be returned to Mr. Beecher."

"Not at all," he replied. "Dr. Beecher will never think of it again. Of course, if he asks you for it you must give it up."

He never inquired for it; and, with its old pin undisturbed, it was in my possession over 42 years, until, at the earnest request of one of the professors, I presented it to the library of Wabash College, Indiana. Few indeed are the persons who could make much, that would resemble the original, out of the scrawled manuscript of that wonderful discourse.

I can not resist the temptation to give a short description of a laughable interlude which took place the next morning, in the lecture-room of the Theological Seminary. An appointment had been made for Dr. Beecher, who was then Professor of Theology in Lane Seminary, Ohio, to address the students on the religious wants of the West. After a stirring appeal to the young men to "go West," the doctor asked Mr. Brainard to make some further remarks, and resumed his chair upon the platform. For a while he listened with fixed attention; and then, apparently forgetting every thing else, he took from one of his pockets a penknife. He first tried its edge on one of his fingers, and then, propping one of his legs upon the other, he began very vigorously to give his knife the desired edge by using the sole of his boot as a whetstone. Several times he tried the edge again upon his finger, until at last he seemed satisfied with his job, and returned the knife to his pocket. His attitude, after this performance, was just the same as before, and no doubt he himself was unconscious of this curious display. L. L. LANGSTROTH.

Dayton, Ohio.

Continued.

THE NEVER-FAILING (?) BASSWOOD.

HOW A WISCONSIN BEE-KEEPER SPLICED OUT A POOR SEASON; NOTES ON RAMBLER.

Editor Gleanings:—Having been taught a never-to-be-forgotten lesson on the instability of worldly things (this year), and having personally visited a large number of the apiaries of Grant, Crawford, and Vernon Counties, during the past autumn, I think I may be able to place a few ideas in readable shape before your readers.

You see, after 16 years of experience in these basswood forests, and only one partial failure in the honey-flow from that source, I naturally became conceited that my locality, at least, was infallible. So last spring when we set out our 200 colonies in good condition, I said, "Now I will put out two acres of raspberries and blackberries, and begin the construction of a large and commodious house there. After the honey season I will complete it through the aid of my little workers." I accomplished my part all right; but the bees failed to connect—not only failed to finish my house, but failed to give surplus enough to eat on one mess of biscuit; but, instead, drew on us for 5 bbls. of McKinley sugar to complete their winter stores. The season left me in possession of one fact; namely, that it is *possible* for the honey crop to fail, even in Southwestern Wisconsin.

When speculating as to the cause of the dearth of honey I should like to borrow Dr. Miller's term, "I don't know." The basswood bloom was fresh and luxuriant in the valleys, and all the conditions seemed normal during basswood bloom, for the

Rain had ceased to pour
About a week before;
And the days and nights were hot,
But the nectar, it was naught.
The electric feeling, it was there,
But honey here is very rare.

There, I never knew till this minute that I was a poet.

I suppose the excessive rains had something to do with it. I heard one discomfited farmer say that it rained 40 days in May and 45 in June; but I have since thought he must have meant times instead of days. After meeting with this complete failure in my honey crop I was confronted with the fact that the house would have to be finished next season, and that five healthy and vigorous children would need considerable to eat and wear, besides a lot of schoolbooks, before another season. So, guided by the axiom that "a man is not always licked when he is down," I took an agency from the old reliable Richland Co. Nursery and commenced work two months ago. I have not only earned $100 per month for myself, but have greatly enlarged my circle of acquaintance; seen the ruins of scores of small apiaries, but found out that my own locations were among the poorest for this season. Out of some 1500 colonies that I visited, only four had taken any surplus. My friend (and neighbor) Mr. A. G. Wilson, had taken a small surplus from 50 colonies he had moved down the Kickapoo River to Wooster, in Crawford Co. Mr. J. W. Van Allen, of Haney, had also taken a little; also friend Dexter, of Boscobel, had a small quantity. But Mr. A. A. Armes, of Hurlbut, Crawford Co., had done the best of any one I have heard from in this part of the State. He secured some 45 lbs. per colony.

I found the conditions much the same in all the apiaries I visited. The stores showed that the bees had worked diligently all summer, for their stores were made up of a small mixture each of every thing, from apple bloom to aster; although the best yield being in the fall, it makes the honey average dark. It is a novel sight for me to look into the brood-nest and see nearly all of the winter stores dark honey. I never saw it before in this section of the country.

Adjacent to the above-named apiaries I saw considerable of the so-called fireweed growing where fire had run over the ground last spring. This, too, is something new for this country, and I suppose partly accounts for their small surplus. Many more bees will die this winter, which will nearly rid the country of imitators, who declare they intend to keep bees enough for their own use only, but still keep from 20 to 30 colonies in the field, and all they accomplish is to use up the pasture and produce, and get a few small dauby lots of honey, which they use to spoil prices with instead of using it up in their families, and giving it away to their neighbors, which is all it is fit for. The painstaking bee-keepers have their bees equalized, fed (if necessary), and snugged away for winter, and we have again pinned our faith to them, hoping they will do better next season than the last.

I wish to say here, that my experience with the score or more of men who keep bees that I have visited in the last two months is very

flattering to our craft. I find them men with broad and liberal views on all questions of interest, nearly all men of temperate habits, and a large per cent truly Christian gentlemen.

ANOTHER GENTLE HINT FOR RAMBLER.

I hope the Rambler will visit the World's Fair. You know that Cupid is quite a tactician, and has been known to be successful in some cases by blazing away at the stomach instead of the heart; and as the Rambler has been eating his own cooking for the past year, he may be more tender—well, you see the possibilities. I was thinking of Rambler the other night. You see, the young people here insist on having my wife for superintendent of the Y. P. S. C. E. I do not belong myself, but I want my children to, so I sometimes take care of the baby, and my wife takes the older children and goes, while I spend my time entertaining the baby and meditating what I should do were I deprived of these blessings. I guess it does me good, too, for I *know* I more fully appreciate my family after one of these evening's lonesome meditation. I think the whole fraternity will join me in saying that it were better for the Rambler to be seen up nights hunting over his cupboard for paragoric or some other soothing-syrup to quiet the *little* Rambler, while the mother gracefully looked on and criticised, than to see him as he is, dressed with a look of rage mingled with fright, hunting for a stick of greasewood to throw at those pesky polecats. I think if your artist would picture a little Rambler sitting up in his little trundlebed in that lonely cabin, and crying with his father's persistence, he would see all those pests that live under the floor leaving for more comfortable quarters. — M. A. GILL.

Viola, Wis., Dec. 13.

MANUM IN THE APIARY.

FEEDING BACK; EXPERIMENTS IN SUGAR HONEY.

"Have you commenced feeding your bees so soon?" asks Charles, as he enters the honey-house, just as Manum is going out with a pail of extracted honey.

"Yes, Charles, I am feeding back some of my honey that I have extracted from the unfinished sections, to have some of my best unfinished ones completed."

"Do you find that it pays to feed back?"

"Yes, it does in my case, for the reason that I have but very little call for extracted honey; and this year I have got so many unfinished sections that, if I did not extract from a portion of them to get the remainder finished, I should have more extracted honey than I can dispose of in my home market; and, furthermore, when I get this honey into the sections again, and nicely sealed over, it is worth more than it is now."

"Don't you find there is a shrinkage in this honey by feeding it back?"

"Yes, there is some shrinkage, but not in proportion to the difference in the price between comb and extracted honey, inasmuch as the combs are already drawn out."

"What makes your extracted honey so thin? Mine is thick and heavy."

"Well, Charles, in order to get the bees to take it from the feeders rapidly I find it necessary to add one-third warm water; by so doing I find that they do much better in finishing up their work than where it is fed to them too thick. Just step out here and I will show you. There, you see this hive has on 80 sections that were given them day before yesterday; and, as you see, they are nearly finished. I think by to-morrow night they will do to take off and more put on."

"My! they are working in the boxes as busily as I ever saw bees work during a good basswood flow. How many colonies are you feeding in this way?"

"Only 15. These 15 colonies will do all my finishing up."

"How much do you feed at a time, to each colony?"

"About 15 lbs. These new feeders, you know, hold 16 lbs. of thick syrup, such as we feed in the fall for winter stores; but this diluted honey is not as heavy as our syrup is, and I calculate that a feeder full will weigh only about 15 lbs., though I have never weighed any to ascertain."

"Have you ever tried feeding sugar syrup for the same purpose that you are feeding this honey?"

"Yes; and right here are two colonies that I am experimenting with in feeding sugar syrup. Now, I want to show you the difference between the two kinds of honey. This sugar honey, you will see, looks differently where it is capped over; the cappings look watery, or icy, as though the honey were frozen in the comb. I don't know why it should be so; but there it is; it shows for itself. I thought, when I examined the honey on the first hive I opened, that it was the nature of the bees of this colony; but when I found that both colonies capped their honey in the same way, I thought that it might be owing to the sugar syrup fed them; however, that may not be the case. Two colonies are hardly enough to prove the matter for a certainty."

"Well, now, Manum, to be honest, do you think that feeding sugar syrup for the purpose of having it stored in sections to sell as honey will pay us in dollars and cents, laying aside all conscientious scruples as to the dishonesty of the practice? Have you tried it thoroughly enough so that you are satisfied regarding the matter?"

"Well, Charles, you have asked a difficult question for me to answer. I wish you would try to confine yourself to *easy* questions. In the first place, you ask whether feeding sugar for the purpose of making honey will pay. I will answer that by showing you what these two colonies did last week. Here are the figures. The two finished up 320 sections, two sets each, of 80 to the set; 320 sections (partly filled), weighing 150 lbs., at 15 cts. per lb., would be $22.50 for the honey given them in the sections; 300 lbs. of sugar fed them, at 5 cts., $15.00, making $37.50 worth of sugar and honey given them. The 320 sections, when removed from the hives, weighed 302 lbs.; and, at 15 cts. per lb., would be $45.30. Now we will deduct the $37.50 worth given them, and we have $7.80 for the trouble of mixing sugar, feeding, etc., which is fairly good wages. Therefore, if sugar can be bought at 5 cts. per lb., and we can sell our honey at 15 cts., as it comes from the hive, there is profit in feeding sugar."

"Well, Manum, but what has become of all the sugar you gave the bees? You fed nearly as much *dry* sugar as you have taken off in the sections, including the 150 lbs. of honey that was already in the sections. Surely it could not have evaporated that much."

"No, Charles; not all this waste went up in vapor, but a good portion of it went to support the bees and in comb-building, and some of it was stored in the hive; perhaps 15 lbs. of it is still in the hive; and as I am following up the experiment with these same two colonies, I am of the opinion that the gain will be more in favor of the sugar this time, because the combs in the brood-chamber are so well filled that a

greater per cent of the syrup fed will go into the sections. But you see, Charles, that, if I had figured the sugar at 7 or 8 cts. per lb., and the sugar-honey, as it comes from the hive, at only 11 cts. per lb., the margin in favor of feeding sugar would be very small. Hence, taking the labor of feeding, preparing the syrup, and the liability of the 'stuff' selling at a lower price than real honey brings, it is quite strong proof—enough, I think, to prevent a majority of bee-keepers from trying to get rich by feeding sugar to be stored in sections. Of course, my experiment has been with only two colonies. It may be, that, with a more extensive trial, and with more experience, the result might be more favorable to the sugar feeding; but I hardly think it would pay us to keep bees for the purpose of producing an article of honey made wholly of sugar and water."

"Manum, judging from present indications, do you think there will be much sugar honey put on the market very soon?"

"Dear me, Charles! this is another of your difficult questions, and one which I wish I might answer with a decisive *no!* but I fear some, if not many bee-keepers will try their skill at feeding sugar, especially in poor seasons. I judge not only by what I read in our bee-papers, but also by the numerous letters I have received from bee-keepers, who ask many questions regarding the matter, such as to the amount of water required for 100 lbs. of sugar; 'When is the best time to feed?' 'How much shall we feed at one time?' 'How often?' 'How many sections shall we put on at one time?' 'Would sugar honey, so called, be (according to Prof. Cook's idea, that it is really honey) a violation of our State law regarding the adulteration of honey and maple sugar?' 'Can I practice it and recommend it?' 'Is my new feeder rightly adapted to the purpose?' etc."

"Well, well! Did you answer all these questions?"

"No, I did not, for I was disgusted with some of them. There was so much selfishness exhibited in some of these letters that I would not gratify such selfish motives as I thought I saw in them; and, there not being even a postage-stamp inclosed to pay the postage on an answer, they therefore found a lodging-place in the waste-basket. As regards the reference to postage-stamps, I am accustomed to such neglect on the part of the writer, for not one letter of *inquiry* in 50 contains a stamp. However, if the tone of the letter indicates an honest purpose on the part of the writer, I never hesitate to answer. I am always ready and willing to impart to others the *little* that I know about bees; but, at the same time, I like to feel that the inquirers are sincere, and will appreciate what is given them, inasmuch as it is of their own seeking." A. E. MANUM.

Bristol, Vt., Dec. 26.

EXCEPTIONS TO ALL RULES IN BEE-KEEPING.

DR. MILLER RECONSIDERS SOME OF THE STATEMENTS IN GRAHAME'S ARTICLE.

On page 916 Mr. Wilder Grahame very justly says that more light is needed as to the matter of reproduction in the bee; and in his attempt to throw light upon it, as it seems to me, he illustrates the fact that we are likely to follow traditions and jump at conclusions without sufficient knowledge. I hope he will take it kindly if I try to show some of the things of that kind in his article.

He says, "Everybody, perhaps, knows the queen-cell . . . opens downward." If you cut out a queen-cell and put it in a horizontal position it will hatch all right. More than that, I have seen queen-cells placed horizontally by the bees between the lower edge of the comb and the bottom-bar. So there are exceptions to that rule.

Again, "If all things are favorable, the larva becomes a queen in 16 days." That's according to the books, but I am somewhat of the opinion that careful observation under the usual conditions in which bees raise queens, when left to their own sweet wills, will establish the fact that often, if not generally, queens hatch more nearly 15 than 16 days from the laying of the egg. Thirty years ago, sixteen days was not the orthodox time. It was 17 or 18. The Baron of Berlepsch says (*A. B. J.*, Vol. I., p. 199) his "experiments show that the opinion generally entertained, that the queens emerge between the seventeenth and eighteenth day after the eggs are laid, is correct."

In the same volume, p. 143, father Langstroth reports a case in which the queen was 21 days in coming to maturity; and it will be noted that it was started in a nucleus, presumably without a laying queen. So I do not dispute that it may take, and perhaps generally does take, 26 full days for a queen to mature in the cases that have been generally observed; yet in a number of cases my plans have come to grief by trusting to 16 days; and I think it quite likely that if, instead of taking nuclei, or colonies in any way out of their normal conditions, a series of careful observations were made upon full colonies when preparing at the usual time for swarming, some deduction would be made from the 16 days.

Again, it is stated that "after the old queen leads a portion of the swarm"—by the way, it would be better not to say the queen *leads*, but *accompanies* the *whole* rather than a *portion* of the swarm—that "if the young queen hatches before the colony is ready for her, the workers confine her in her cell, and care for her there until the conditions are more favorable." Probably "matures" is meant instead of "hatches," for the bees would hardly confine a queen to a cell after she had hatched out of it. But even with that correction, is the statement true? Do the bees ever confine a queen in her cell because of the presence of a *laying* queen in the hive? Is it not rather the case that, when a prime swarm is delayed until the young queen is fully mature, the young queen is allowed to emerge and to kill the old queen, or else that the workers themselves kill the old queen?

Next, the statement is made, that, if all the other young queens are not destroyed when the first one hatches out, a second swarm will result. Isn't that putting the "cart before the horse"? Isn't the preserving of the young queens a result, rather than a cause, of the determination to swarm?

When a queen is lost, Mr. Grahame says, "If the colony is healthy, and there is brood in the hive not over three days old, worker larvæ are removed to queen-cells," etc. That is certainly something new, but is it true? In the hundreds of cases that have come under my observation, where queen-cells were started after the removal of the queen, I do not remember to have seen a case which lent any color to such a belief. In every case the bottom of the queen-cell had the hexagonal form, showing that the bees had left the larva in the original worker-cell. Has Mr. Grahame any proof for his statement?

The bridal trip of the queen, according to Mr. Grahame's statement, is made, "if the weather is favorable, the third day after hatching." I think the books of the present day will not support this. Dadant, in the revised Langstroth,

p. 51, says, "The shortest time we have ever noticed between the birth of a queen and her bridal flight was five days, and in this we are in accord with Mr. Alley, one of the most extensive queen-breeders in the world. The average time is six or seven days." I think those who believe fertilization sometimes occurs at three days consider this very exceptional.

Mr. Grahame says fertilization "must be within 21 days or she will be barren." Huber taught this a hundred years ago; but it was shown to be an error many years since. On page 104 of *American Bee Journal* for 1861 appears the statement that the Baron of Berlepsch had several queens fecundated when thirty days old, and one at thirty-three, that were yet fully fertile. Also that Mr. Hemman, in 1860, had a queen that was not fertilized until 46 days old, and yet produced worker brood. If my memory serves me, I saw, not long ago, in a French bee-journal, a report from no less authority than Chas. Dadant of a case of successful impregnation at 40 days old. So the statement is too sweeping, that fertilization must take place within 21 days of birth or barrenness will result.

But an interesting question is still left open: At what age, as a general rule, does a queen become incapable of impregnation? It is just possible that 21 days may be the answer to this, and on some accounts it may be an important question. There is room for experiment here; and if there are many cases in which the limit runs to 30 or 40 days, then I would hardly expect the average to fall as low as 21.

Marengo, Ill., Dec. 20. C. C. MILLER.

RAMBLE NO 76.

THE CABRILLO CELEBRATION.

My travels now lead me due south from Los Angeles, my objective point being San Diego. The train runs inland about half the distance, then it comes in view of the ocean at San Juan. Now, please don't pronounce that Jewan; simply say *San Wahn*, and you have it. Here our train runs near the San Juan Capistrano Mission, an old adobe structure partly in ruins, and a hundred and twenty years old. It is one of the old landmarks of a former civilization, and a movement is in progress to repair many of these historic relics. From this town we follow the seashore and catch many grand views of the ocean. A ride of 127 miles lands us in San Diego, noted chiefly for a glorious climate and a beautiful bay, which, with the addition of a cloudless sky, reminds the foreign traveler of the bay of Naples, in Italy. The narrow entrance to the bay, away out at Point Loma, is fittingly named the Silver Gate.

The city has passed through its boom period, and the evidences of it are still visible in vacant houses. Still, San Diego is a lively town, and is looking forward to a more permanent period of growth and prosperity. From the animate appearance of the streets upon our arrival, one would suppose that there was now a mighty boom on; but the happy-appearing crowd were here to take part in the 350th anniversary of the discovery of San Diego harbor, and of California, by that bold Portuguese explorer Juan Rodriguez Cabrillo. It was, therefore, called the Cabrillo celebration, and brought within the gates of San Diego 20,000 people, and of such a variety as can seldom be seen. Soon after arrival I fell in with a tall gentlemanly appearing fellow, and he proposed a trip across the bay and a visit to the famous Coronado Hotel. I agreed immediately, and off we started on a double-decked electric street-car for the ferry.

"Well," says I all to myself, "this fine fel low may be a bunco man, but I don't care ducats. I'm loaded for him." Then says I out loud, "Isn't this just fine! Why, it reminds me of the words of the immortal Shakespeare, where he says, 'What's the hods as long as yer 'appy?'"

He looked sort of solemn, and didn't say a word about Shakespeare, and I knew he was not a bunco man, for that class of people can quote the Bible, Shakespeare, or Bill Nye, correct at the word go. We viewed the exterior beauties of the hotel, and patronized the interior by each taking a toothpick as we sauntered through to the seaside veranda; and while reclining in easy-chairs, with our feet on the railing, with the foaming breakers dashing below us, my friend remarked, "Well, I don't know but I feel as well as though I owned a million."

"Yes," says I, "or five. Ain't we having a ripe time?" I slapped him on the knee, and beamingly remarked, "What's the *hods* as long as yer 'appy?" But such a state of enjoyment

"WHAT'S THE HODS AS LONG AS YER 'APPY?"

couldn't last long, and we returned to the city, and were lost to each other in our respective lodgings.

As the celebration was in honor of an ancient Portuguese navigator, but sailing under the flag of Spain, the Mexican government was invited to participate, and Governor-General Torres, with a brilliant staff, and the Mexican military band of thirty musicians, were among the honored guests. The celebration covered a period of three days, and was divided into a grand parade, Indian fiesta, and vaquero (vah-*ka*-ro) tournament.

The grand parade started upon its line of march after receiving from two ancient-looking ships several Portuguese dressed in the style of the 16th century, representing Cabrillo and his followers. The Mexican Band was given the post of honor, and led the procession. The Governor of the State, his staff, invited guests, officers of the army and navy; two tribes of Indians in primitive costume, armed with bows and arrows; 150 vaqueros, many from Mexico, with tall decorated hats and richly embroidered serapes over their shoulders. Their high-pommeled saddles glistened with silver ornaments, bearing the ever present lariat and revolver. Various civic and military organizations took part, and, lastly, several floats of an historic and local nature. The one causing the most comment and mirth was a covered wagon, of emi-

grant days, and upon the canvas appeared the words "Pike's Peak or Bust."

In the evening the Mexican Band discoursed sweet music to thousands of people in the Plaza, and, unlike the blare and noise of our bands, suggestive of war and turmoil, the Mexican music was of a softer nature, and calculated to lead you into the realms of dreamland.

SUISANIO INDIAN PROCESSION IN NATIVE COSTUMES.

"With half-shut eyes, ever to seem
Falling to sleep in a half-dream."

This band was a prominent feature through all of the exercises, and won many an encore and unstinted praise from thousands.

The second day of the celebration, the Indian fiesta drew an enormous crowd. The Indians were dressed as they were the day previous, in short skirts and breech-clouts, and their naked bodies were decorated with many-colored paints. In these grotesque costumes they performed their war-dances and the witch-dance. Fierce yells and whoops came from the men, while the squaws sat in a semicircle at one side and kept up a monotonous chant, accompanied by the rattle of gourds. The scene was of a weird and wild nature, and the spectators were very quiet and attentive during the performance. In some of the tule lodges in the encampment were very aged Indians. One squaw was said to be 128 years old. Her hands and feet had a scaly, unwashed appearance, and her ensemble was as uncanny as a very witch.

In another tepe was an aged chief, 108 years old. The great age of these worthies shows the healthful effect of simple diet and open-air living. The beef that was issued to them during the encampment was considered not fit to cook until it had hung in the sun half a day, and had been well covered with innumerable flies. This was also, probably, conducive to good digestion and long life. The Indians, and especially these rare specimens of old people, were targets at which were leveled dozens of cameras, both professional and amateur. They were superstitiously averse to facing the instrument; but there were so many cameras that poor Lo finally had to surrender

his scruples, for it was a hopeless idea to get away from the Kodak.

The last day of the celebration was given to a tournament by a band of 150 vaqueros. This also drew an immense crowd; and when a score of wild steers, with long sharp horns and wicked eyes, came dashing into the arena, followed by fifty mounted vaqueros, all on a dead run, the scene was exciting enough. The steers were skillfully run into a corral, from which they were let out one at a time; and as the lone

"LO! THE POOR INDIAN" CONQUERED AT LAST.

steer entered the arena on a mad rush for liberty, a vaquero on his well-trained pony gave chase. The slender-looking rawhide lariat, after a whirl or two around the head, was thrown out in a large loop, which settled over the horns of the steer. The pony settled back, and, just as soon as he felt the rope tighten, and the steer halt, he then rapidly made a circuit around the dismayed bovine. The lariat began to tighten around the steer's feet, and the pony braced himself for the shock, which came when the steer tumbled in the dust. The vaquero then leaped from the saddle, and, with a hair rope, securely tied the hind legs of the steer, and the capture is complete. A cash prize was offered to the vaquero who would rope and tie a steer in the shortest time. This was accomplished in one instance in 58 seconds, which, I was informed, broke the Pacific Coast record.

During the competition, many exciting incidents occurred. A lariat broke after it had encircled the horns of a steer; many of the crowd, and especially camerists and notably the Rambler, had scaled the fence and entered the arena to get a better view and a favorable position for a snap shot. The steer, finding himself at liberty, recklessly made a dash for the crowd; and such a scrambling to get out of the arena, man never saw. While many shinned up the fence, others, notably the Rambler, went under on all fours. A professional, with his big camera and tripod, got the latter mixed up with his legs, and he went under the fence also, with a two-forty lunge. The steer, however, changed his mind and ran off in another direction. The crowd laughed and shouted, and evidently thought it didn't "make any hods as long as yer 'appy."

The youngest-appearing vaquero of all, roped a vicious-looking steer; and, as he tightened up suddenly on the rope, it was jerked from the saddle, and the steer ran like a deer up the track. The little pony bounded rapidly in pursuit, and, as he drew alongside the rope rapidly trailing in the dust, the young vaquero swung down head first from the saddle, grasped the rope, and resumed his position in the saddle without slackening the speed of his horse. This feat brought down the crowd, with several rounds of deafening cheers, during which the steer was thrown and tied.

As I had experienced the delights secured only on the back of a bucking broncho, I was deeply interested in the skill displayed by vaqueros in their endeavors to mount and ride the wildest specimens of kicking and bucking bronchos that could be found, and a few won my hearty applause by sticking to the saddle.

During the celebration, two of the U. S. warships, the celebrated Baltimore and the Charleston, were in the harbor, and were visited by thousands of people who had never before been on board a man-of-war. The big guns, the Gatling guns, and death-dealing instruments of all kinds; the electric search-lights that can focus the rays of light on an object at night ten miles away; the scrupulous neatness of ship and implements, and the neat appearance of the crew in their spotless white uniforms, all gave the visitor new ideas and lasting impressions of the power of the White Squadron.

All together, the three days of festivities were filled with pleasant, unique, and exciting scenes; and from it we obtained a good idea of far Western life in its various phases, and long to be remembered by thousands, including the

RAMBLER.

WIRING FRAMES.

PRIORITY OF LOCATION, ETC.

As I have sat at my bench on rainy days, wiring frames, I have sometimes wondered how many of my fellow bee-keepers practice that method of strengthening their foundation comb, and Dec. 1st GLEANINGS answers the thought by telling me that enough of them do so to use up, even in a poor season like the last, two tons of wire. This wiring of frames is a little tedious, but I wish that all the work I do paid me as well for the trouble as it does. Some years, owing to laziness, or a like inexcusable cause, I put a good deal of foundation in frames that are not wired, and always regret it afterward, when, on initiating them to the extractor, I see many combs fall from the frames, and pile up in a sticky mass on the bottom of the can. Besides giving strength to the combs, wiring makes them more shapely and better, yet prevents sagging and the consequent two-inch strip of drone comb along the top of the frame. The limitation of drone comb in my hives is a hobby with me, and I would wire my frames were its restriction the only thing gained. I can not see what objection some have to wiring frames. The satisfaction of knowing that good combs will result, when hiving a swarm on wired foundation, is of itself worth more than the cost of the wire, while the work entailed by wiring is not so great as that which is required to look after unwired foundation to see that it has not fallen down, nor is being drawn out wavy with kinks and curls.

Comb foundation is used very extensively in California, but I believe only a comparatively small proportion is fastened to wired frames. The practice most in vogue here is to use strips of foundation only about half the depth of the frame. This is not so apt to break down or to sag; but of that last it matters not, for, though the upper half of the comb may have cells of worker size, the addition put on by the bees is most apt to be of drone size, especially if honey is coming in fast when the comb is built. In every apiary, I suppose, there is some natural comb built, and much of this will be drone. I make it a point to watch for all such combs; and where the drone-cells are only in patches I cut them out and fit worker comb in the place;

or, if honey is coming in, and comb-building going on, put the pruned frames in some hive which will patch them up with worker comb. Hives having young queens but recently commenced laying will always do this if the comb to be worked upon is placed in the center of the brood-nest; so, too, will any weak stock having a vigorous queen. But hives with old played-out queens, or colonies on the point of swarming, will generally build drone comb.

I want to call Dr. Miller's attention to the top of page 837, where he says I am talking rather at random when I say (page 802), "An inexperienced person generally manages so badly that what little honey he gets makes no difference in the other's crop;" and where he *certainly* talks at random when he suggests that Mr. Lazicuss, who managed so badly as to get but two tons of honey in a twenty-ton locality, will continue to get that amount, even when he has Mr. Upandatit in competition. Now, you know, Dr. M., and every practical bee-keeper knows, that, when there are bees enough on a range to lick up all the honey, each hive will not get as much as when there is ten times more honey on a range than the bees can gather. The practical result of this competition to Mr. Lazicuss would be his extinguishment. As for his moral right to possess the location, it is on a par with that of the Indian to this continent. The one needs a twenty-ton range that he may get two tons of honey; the other, a continent capable of supporting toiling millions, that he may live by hunting deer and buffalo. I can think of but one consideration which would make me respect Mr. Lazicuss' claim to the range; and that is, when his apiary is rotten with foul brood.

There are a few more of the doctor's views on this subject which I should like to discuss, but I have to pay my respects to the proof-reader, who criticises me for wishing to anglicize Spanish names, and then straightway proceeds to use anglicized words himself. To be consistent, instead of the anglicized word "Spanish" he should say "Español;" and for "Mexican," "Mejicano." I did not suggest that the names be translated, but spelt so as to conform to the sounds of our English letters; therefore the Indian names referred to are not a parallel case, as the Indians had no alphabet, and no particular way of spelling their names; so when the Americans undertook to write them they naturally used that combination of English letters which would come nearest to making the sound intended. Among our Indian names you will be told to spell the word "Chi-hua-hua," and to pronounce it "Che-wah-wah." The Spanish accent is so alien to the English tongue that not one American in ten thousand ever uses it in pronouncing those names. On page 890 A. I. R. uses the word "dobe," and tells us it is pronounced "do-by." So it is, Mr. Root, when anglicized; but the Spaniard spells it "a-do-be," and makes three syllables out of it. This shortening of these names is right in line with A. I. R.'s talk in a recent paper where he calls attention to how the bicycle is usually called a "wheel," and "telegraphic dispatch" has gravitated down to "wire." The Mexican has plenty of time on his hands, and believes the principal object of life is to dance, and smoke cigarittos. Such a people can afford to use long words, and do sometimes give even whole sentences to a town for a name. Los Angeles, for instance, was originally known as "Nuestra Señora, la Reina de los Angeles." As for our "villes," "centers," and "burroughs," they are three, while the Spanish have only their eternal (I had almost said infernal) "Saint" to stick on to every thing. If Spanish names are pretty, the best way to retain that beauty is by using that combination of English letters which will spell them as they should be pronounced. Don't stick an H in the middle of a word, as in Cah-uen-ga, and tell Americans to pronounce it as W. for they won't do it, as the people who live here know.

Newhall, Cal., Dec. 15. WM. G. HEWES.

THOMAS WILLIAM COWAN.

HIS EXTENSIVE LIBRARY ON BEES; HIS MICROSCOPE-SLIDES, ETC.

Friend Root:—Thinking perhaps you would like to have the inclosed letter to publish in GLEANINGS, I send it. H. TOWNSEND.

Philadelphia, Pa.

[It is with pleasure that we give place to the letter.]

Dear Dr. Townsend:—How I wish I could be at the meeting of the Philadelphia Bee-keepers' Association at your house Monday evening next! I should like to tell the members something of my experiences and observations in my long journey through Russia, Germany, France, Switzerland, and Great Britain last summer, and of my visits to the beautiful home of Mr. Thos. William Cowan, editor of the *British Bee Journal*, in London. It is the home of a typical man of letters, a lover of books, a seeker

THOS. WILLIAM COWAN.

after the truths of science. He has a library of about 10,000 volumes, containing many rare and valuable books. That part of it relating to the honey-bee is especially interesting to the student in apiculture. It is probably the largest collection of the kind in the world. In it are full and complete sets of most of the bee-journals of the world published in Europe and America, in various languages. Some of these sets are the only ones known to be in existence. Many of the separate volumes are of extreme antiquity; they are grouped according to age, many of them showing the advance in the science in the different editions issued at intervals of many years. They are also classified according to their respective language—German, French, English, Latin, etc. Many of Mr. Cowan's own books have been published in nearly all these languages.

It is really very impressive, and seems to dignify the subject we are striving to advance, to see how much has been written about it by many of the soundest thinkers and clearest writers of the world.

Next in interest to the books was a collection of microscope drawings and plates, and papier-mache medals of the bee and kindred objects. I was made very happy by a gift of a photographic representation of foul brood, which I will try to have reach you in time for the meeting. As a study of the true disease and its dire results, it is most valuable.

There was also a collection of sample bottles of honey—tiny bottles they were for the most part, from a quarter-pound to a pound each, carefully labeled to show the place of production—some from Africa, from Palestine, Italy, and from different parts of Great Britain.

We spent an hour or so in tasting and discussing the relative merits of each, and the development of the industry in the various countries of the world.

Mr. Cowan spent a number of years in Africa, and in Asia and Russia, and is wonderfully well versed in the subject in all its bearings.

[Perhaps we should explain that the writer of the letter above, Mrs. M. Louisa Thomas, is ex-treasurer of the National Council of Women. She is a member of the Russian Famine Relief Committee of the United States, and her name appears alongside of that of senators of the United States, and the governors of the various States. We infer that she has been on an inspection-tour in Russia, and if so she can speak from actual observation. We hope we may be favored with her letter on Russian bees and bee-keeping.

We have long known that Mr. Cowan had a most extensive library; and it is a gratification to us that we are able to give our readers an inside glimpse into it as it were. It will be remembered he honored us with a visit in 1887, at which time he exhibited one of the finest microscopes in the world, together with a valuable collection of microscope-slides relating to apiculture. These latter were of Mr. Cowan's own preparation, many of the specimens being rare and valuable; and the instrument, while made entirely by its owner (presumably in that unique workshop), would fully rival in beauty of finish and workmanship that turned out by any maker of optical goods. While he was here, we were impressed with the fact that the editor of the *British Bee Journal* was not only a scholar and a scientist, but an extraordinarily fine mechanic.

NORTH AFRICAN BEE-KEEPERS MANIPULATING A HIVE OF PUNIC BEES. PHOTOGRAPHED BY MR. COWAN DURING HIS VISIT TO TUNIS IN 1892.

While in every room of his charming house I saw evidences of his earnestness in his life pursuit. I found one large room specially set apart, filled with tools of every description, all so orderly and so carefully arranged as to seem like a poem in machinery.

I was sorry not to be able to accept his kind invitation to visit some of the large apiaries in Great Britain, but was obliged to defer the pleasure to some future visit.

Mr. Cowan hopes that the bee-keepers of America will not fail to improve the great opportunity of making an exhibit at the Columbian Exposition in Chicago next year. I also join in this hope. The science as an industrial pursuit never seemed to me so important as it does to-day, and no part of the world presents so many favorable conditions as does the United States of America. We must not let the opportunity pass.

I will reserve my report of the Russian bee and bee-keepers for another time.

M. LOUISA THOMAS.

New York, 453 W. 144th St., Dec. 10.

Some days ago we received a photograph, illustrating the temper of Tunisians (Punics) taken by Mr. Cowan himself while in Tunis. As it was taken by the instantaneous process, the shadows were a little too deep to be illustrated by the half-tone process. Nearly all photographs, unless they are extraordinarily clear in detail, lose something by this process of reproduction. We accordingly instructed

our engravers to make an etching representing all the details as accurately and faithfully as possible. They have succeeded perfectly, as a comparison with the original shows.

Comment by us on the picture is unnecessary, further than to note how the natives "prepare for war" when handling Tunisians. It seems they have to handle the frames with frame-tongs. It speaks volumes, representing as it does an actual occurrence in an apiary where Punic bees are kept in their native clime, and will lend additional interest to friend Baldensperger's letter just below.]

FROM PH. J. BALDENSPERGER.

A REVIEW OF BACK NUMBERS OF GLEANINGS.

Mr. Langstroth's article on the "so-called Punics," as well as the editor's footnote, p. 492, July 1, 1892, clearly shows that the bees were not pure North Africans. Of the latter I have seen and handled many colonies, both at my brothers' apiaries, near Algiers, as well as some others. The people there have never attempted to introduce a foreign race, so their bees are all pure North Africans. The bees show a very slight yellowish coloring on the under side of the abdomen. When young, like all bees they are covered with gray fuzz, which with age and long-continued robbing disappears, leaving the bees shiny black. They are smaller than the ordinary French bees down here on the coast. The queens are very difficult to find. They manage to get out of the way as soon as the bees are disturbed by smoke or by jarring the frames. The hind legs of the queen are less yellow-colored; the drones are black, and destitute of the large brush of hair so peculiar to Palestines. The bees adhere to the comb when taken out, but are easily jarred from it. Except their being easily irritated, I think the one great drawback might be considered their robbing propensity. My brothers, who had several poor seasons in North Africa, say the bees did not stop robbing, even during a small honey-flow, at which time they tried to get into the extracting-tent so much that, weeks afterward, they still remembered the place where they had been robbing. In Palestine they do not act so badly, for during a honey-flow we can extract in the open air. The North Africans did not act differently from their Palestine "fellow-insects." Here they seem to do well up to date. Occasionally I open the hives in the morning with the temperature at 5 Celsius (Centigrade*) outside (41° Fahrenheit), to try the central heat of a colony, which I found to be between 26 and 33° Celsius, or about 91° Fahrenheit. The following are the different degrees marked in and out of three hives, Fahrenheit scale.

NORTH AFRICANS.

Gal. temperature at 9:30 A.M.,	47°
Near hive,	50
In hive, out of reach of bees,	61
Midst of cluster, 16 frames of brood,	91

CYPRIANS.

Gal. temperature at 8 A.M.,	39°
Near hive,	41
In hive, off bees,	45
Above the cluster,	57
¼ top of frames, not quite in center, 1 fr. brood,	75

* To reduce the Centigrade (Celsius) scale to Fahrenheit, the one in common use in this country, multiply the number of degrees by ⅘ and add 32. Thus, if you have a temperature of 5 Celsius, multiply this by ⅘, which will give 9, and add 32, making 41. Where great accuracy is not necessary, it is better to use 5, or a multiple of it, in order that it may the more readily be divided by 5 and multiplied by 9.—ED.

PALESTINES.

Gal. temperature at 7:30 A.M.,	43°
Near hive, in a cave,	47
In hive, out of bees,	50
Below the cluster,	64
Middle of cluster,	88

In making these experiments I found the bees forming a globe; but they become lively as soon as the thermometer is plunged in between them; and all of them—Africans, Cyprians, and Palestines—would even attack me and fly back to their hives, with the mercury at 39° Fahrenheit; but it does not follow that they really fly out with snow on the ground, if left to themselves. I have seen them flying here with the mercury at 45° in the shade. Such colonies as are exposed to the sun fly out and gather pollen; but they have then at least 50° Fahrenheit.

RECORDS OF WEDDING-FLIGHTS OF QUEENS.

It amused us to read, on page 502, that our regretted friend P. Benson was Dr. Miller, still giving us his good and humorous suggestions in Stray Straws. Discussing wedding-flights of young queens, the same writer says it occurs about the third or sixth day after leaving the cell. I have a close record of 102 queens fertilized in 1891, and I find the wedding-flights have been between one and thirty days. I divided them into four lists; namely, middling, well, pretty well, and very well, as to prolificness. I find ten middling, fertilized the 8th, 13th, 14th, 15th, 16th, 17th, and 23d days.

Eight did well fertilized the 2d, 4th, 12th, and 21st days.

Fifty-six did pretty well fertilized 1st, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 21st, 22d, 26th, 27th, and 30th days.

Twenty-eight did very well fertilized the 2d, 3d, 5th, 6th, 7th, 9th, 10th, 11th, 12th, 13th, 14th, 17th, 18th, 21st, 22d, 26th, and 27th days.

From the above we can see that dates did them no harm, for they changed, being mated promiscuously; and, what is still better, we have 92 that did satisfactorily. I do not know what makes the queens go out for mating, nor what keeps them at home so long, when, apparently, every thing is right, drones plentiful, and weather warm; but very often I found many queens fertilized on one particular day, while, the day following, no movement was made. It is often very vexing to find day after day and week after week passing, and the right day not coming. Our Palestines, which have been described as fearful "fertile worker" producers, would have been destroyed. Think of the number of queens fertilized after two weeks of virgin-queen making!—at least one month laying queenless. Of course, I very often help them, giving them eggs; but very often I do not.

PUNICS FOR HONEY.

On p. 559, July 15, you seem to doubt whether your Punics will do as well as the average Italians. I have given those last-named bees no fair trial, but I expect them to do wonders, if they work even as well as the Punics, for I have obtained 120 lbs. of extracted honey in a honey-flow of about 28 days, from the North Africans; but, of course, we had to fly from their stings. These bees, as well as Easterns, need a good deal of smoke; and let them be well filled before you work with them. They show the regular characteristics of other bees, and why should they not?

FECUNDITY OF QUEENS — DURATION OF.

Mr. Ch. Dadant thinks, page 643, Sept. 1, that the fecundity of a queen generally diminishes only at the end of the third year; but we do not know which queens he means. Certainly it is none of our Easterns. In a big colony, as a rule, 18 months will do for them, and certainly our Palestines supersede their queens when be-

tween a year and a half and two years of age. I know of only a single queen that I tried to keep that arrived at the age of three years. She was a great drone-layer, and in a very short time the colony was reduced to a mere nucleus. Since that time (1886) I have never left the queens more than two years, but have followed the bees' example and changed them at the end of three seasons; that is, 18 months, if I do not find the bees have done so already.

T. F. Bingham may be right about inventions; but where will the matter end? Every one changes a feature of a hive, smoker, extractor, etc., and calls it his own. When in Algeria, some months ago, the inventor of a grape-squeezer was attacked by a similar but previous inventor. The Algerine, in self-defense, said we should have to go back to Archimedes to settle the screw question. Unfortunately, that gentleman died 2000 years ago.

PH. J. BALDENSPERGER.

Nice, France, Dec., 1892.

Continued.

THE NORTH AMERICAN BEE-KEEPERS' ASSOCIATION.

A BRIEF REPORT OF THE PROCEEDINGS, BY ERNEST.

The train being behind time, we were not able to attend the evening session of the first day. As it was, we arrived in time to see the convention adjourn, and to have a friendly exchange of hand-shaking with the bee-keepers. The attendance was not large; but, as we stated in our last issue, it was made up of some of the very best representatives of the various departments of the industry. The evening had been profitably spent in discussing the question of grading honey. Dr. Miller having been put on for a paper on grading, offered the one he wrote for GLEANINGS on page 454. The subject was then fresh to him, and he had carefully considered all the points. This article was read: and the result was, that the system of grading which he proposed was simplified somewhat. We failed to get a copy of the grading that was adopted at the Washington convention, but will endeavor to give it in our next.

MORNING SESSION, SECOND DAY.—SELF-HIVERS.

The first thing on the program was a paper by your humble servant, on self-hivers. As we have already covered pretty much the same ground, at the time we were experimenting, on pp. 318, 521, 568, 593, we will not reproduce the paper here. It will be sufficient to state that our preference was for the Pratt automatic hiver. It had been a perfect success. The only thing we feared was that it might be too expensive. Mr. Frank Benton, who, it will be remembered, has traveled over Europe, Africa, and the East, felt that we should not consider the expense, providing it accomplished the result sought. For instance, if the hiver costs 50 cents, and it saved a swarm worth $5.00, it paid for itself several times over. Considerable discussion followed, showing that, *if* the hiver should prove to be a success, its universal adoption would follow in spite of the expense. We held the ground, however, that it *might* be cheaper to hire a man to take care of the swarms, and do *other* work in an out-apiary, than to depend solely on self-hivers at 50 cents per colony.

We next listened to an exceedingly interesting and valuable address from Frank Benton, on the subject of

VARIETIES OF BEES AND THEIR CHARACTERISTICS.

Although long, it was the most entertaining talk that we believe we ever listened to at any convention. Mr. Benton began his address by giving a description of the general characteristics of black bees; but as these bees are so well known, we will not reproduce his remarks here.

Next he took up the Italians. These were introduced into the United States in 1860 by Mr. S. P. Parsons, acting for the Department of Agriculture, as the government records showed. It was generally stated in the text-books, that Italian bees were first introduced into the United States by Wagner and Mahan; but this was a mistake. They did import the bees, but not until after Mr. Parsons had done so. Then turning to the general characteristics and markings of the Italians, Mr. Benton gave a very fair description, which I also omit. Italians were, he said, to be found in their greatest purity in the regions round about the cities of Modena, Parma, and Venice. Perhaps it may be interesting to note right here, that the Italians which we have been importing to this country for many years have been coming from the vicinity of Bologna, which is right in the midst of the region above mentioned by Mr. Benton.

CARNIOLAN BEES.

Of these Mr. Benton had the most to say. They were black in color, somewhat of a steel gray, but quite different from the black bees. As to size, they were a little larger than the Italians: were excellent honey-gatherers, sealed their honey white, good wax-producers, and collect little or no propolis. They were very prolific, but not so much so as the Eastern races, and the gentlest bees in the world; in fact, no other bees could be compared with them. During the whole four years that he worked with them in their native country, he wore no veil, and yet handled hundreds of colonies. Carniolans could be readily shaken from the combs, and this feature made it possible to find the queens very readily by shaking all the bees out of the shallow brood-chambers such as were used and had been used for a century or more in Carniola.* In fact, it is the way the natives usually find the queens. Carniolans could be shaken from their combs, and not fly up and resent it as Italians would sometimes do. They were not lacking in courage, but the loss of a queen affected them greatly. At first Mr. Benton thought they were rather given to robbing; but later he found they were no worse than other bees. On account of their capping honey so white, and their gentleness, Mr. Benton felt that the Carniolans were the best bees for comb honey.

Referring to their demerits, he acknowledged that they were rather inclined to swarm; but this trait had been encouraged in them for centuries. The native bee-keepers in Carniola practice a method where excessive swarming seems desirable. The swarming mania is simply a trait that has been bred into them; and Mr. Benton thought that the same trait could be bred out, or at least held in subjection, here in America. It would be foolish for Americans to reject them solely on this ground; and while the Carniolans have many valuable traits, he did not think that they would replace the Italians.

DALMATIAN BEES.

These bees were found on the east coast of the Adriatic Sea. Their bodies are rather slender, and are shiny blue-black in color, with lightish

*This is interesting in that it proves the possibility of finding queens in this way in connection with *shallow* brood-chambers. We do not know whether Mr. Heddon claims the priority in this point or not; at all events, it is rather old—older than any of our bee-keepers of the present generation.—ED.

fuzz. In qualities they are similar to Carniolans, though not quite so gentle as the latter.

THE ATTIC, OR BEES OF HYMETTUS,

were found in the plains of Attica—probably the same race of bees that gathered honey for the gods. They no doubt now gathered the same honey, of the same quality that they were reputed to have done in ancient times; but as the native bee-keepers put the honey in goat-skins, Mr. Benton did not think he would like to be one of the "gods." The Hymettus bees look very much like Carniolans, and their movements are the same; but they are very cross, notwithsanding they are good honey-gatherers. They used more propolis, and were great breeders. Mr. Benton here related an incident of a case where he had the Attic, or bees of Hymettus, in an apiary alongside of Carniolans. He had been handling Carniolans, and by mistake opened a hive of the Hymettus bees. The result was, that they poured out in such numbers that he was driven precipitately from the apiary. These and many other bad qualities would make them rather undesirable for importation to this country.

CYPRIAN BEES

were raised on the island of Cyprus, and were peculiar on account of their isolation. They were kept in mud-cylinder hives; movements were very quick—so quick, indeed, that they might flit on the nose. As to their honey-gathering qualities, they exceed all other known races; will often gather honey when others are doing nothing. The cappings of their comb honey have a rather water-soaked appearance, and therefore were not suited for *comb* honey. They were prolific—more so than the Carniolans. Right at this point Mr. Benton wished to emphasize the fact that it was not a bad thing to have bees extra prolific, because an intelligent bee-keeper—one who knows how—could turn it to good account. As to the temper of Cyprians, they feared nothing. Much smoke would not subdue them; in fact, the more they were smoked, the worse they became. They were very sensitive to light; and hence on opening a hive it must be done gradually. By working cautiously, of course using a veil, and a slight amount of smoke, he could get along with them very well. They winter better than Syrians and Palestines. For *extracted* honey, he believed they were the best bees in the world. If honey were to be extracted it would make no difference whether the cappings were water-soaked or otherwise. As the swarming mania has been bred into the Carniolans, so vindictiveness has been bred into the Cyprians on account of their natural environments. Wasps were their natural enemies on the island of Cyprus, and Mr. Benton had known them to pounce upon the weakest of the colonies, and so decimate their number as to finally cause their utter annihilation. Mr. Benton regretted that the Cyprians were not now to be had in this country, and thought they had been discarded prematurely. He believed that they should be kept in their purity, as their crosses were undesirable.

TUNISIANS, OR, AS SOME HAVE CALLED THEM, PUNICS.

These, Mr. Benton said, were found from Tripoli, Africa, westward. He had reason for thinking they were the same bees that were to be found on the island of Minorca. They had been originally imported to France and all that region; and on the island of Minorca they had been isolated. The Tunisians resembled most our black bees. They were much darker, however, and smaller, than the Italians. They fly quick, are excellent honey-gatherers, active, good comb-builders, and cap their honey fairly well; but they were the worst gatherers of propolis of any bees known, and would sometimes close up their entrances to narrow passageways with propolis, leaving little pillars between the holes. Indeed, the amount of propolis they will gather is so much that they are unsuited for comb honey, because they daub the cappings with it so much.* They were vindictive, and probably for the same reason that Cyprians are so; namely, on account of their inveterate enemies the wasps. The Tunisians, when aroused, are ten times worse than Cyprians—far worse than the Orientals, and Mr. Benton thought the introduction of them into this country was detrimental to the best interests of bee-keeping. As Mr. Benton has thoroughly and carefully studied their habits in their native clime, and sent some of the queens to friends in Europe, these statements may be taken with some degree of authority.

APIS FLOREA.

These bees build in the open air, their comb being attached to the limbs of trees. There can be nothing expected from them, as they are quite disposed to migrate.

APIS INDICA.

These were very small and pretty five-banded bees; and as they could be kept in hives, he thought they might be worthy of a trial. They were so small they might be well adapted to the small flora of our country, without detriment to our other bees, since they would gather honey from some blossoms which the ordinary-sized bees might not.

APIS DORSATA.

This was a very large bee; lower part of the body smoky; wings blue-black, and shone in the sunlight; workers were about the size of our queen-bees. Their movements were very different from that of the ordinary bees, and, if disturbed, would whizz from the combs like hornets. They were excellent gatherers of honey, and of good quality, and their wax was produced in such quantities as to make an important article of merchandise. The combs, usually only one, were about 5 feet long, and hang from the limbs of trees. If they have more than one comb it is attached to the central or main comb, one on either side, and not as commonly illustrated in one of the bee-journals, showing several combs attached to one limb. The worker-cells of the *Apis dorsata* were about the size of the drone-cells of our bees, and the drones of *Apis dorsata* were raised in the same cells as the workers. They looked like drones, having a blunt appearance, but differ after all from our drones. The vindictive propensity of the bees had been much exaggerated. They were not particularly cross, and could be handled and kept in hives. Mr. Benton secured some of the bees and found they could be successfully kept in hives. Circumstances were such that he could not make the observation of their general characteristics that he desired, but he found that they were slow to repair combs that were broken. So awkward were they in stinging, that, by a quick brushing movement, the sting could easily be averted; and, even when they were successful in accomplishing their object, the wound was not as painful as from other bees.

Some little discussion followed Mr. Benton's paper. The fact was brought out, that, in California, the crosses of the Cyprians with black bees were so *terribly* cross that those having

*This, our readers will remember, is exactly our experience. The little comb honey we received from them was almost red with propolis.

such bees were getting rid of them as fast as possible. It was also urged, that it was very difficult to get Cyprian blood out of other races, as very little of that blood would show quite decidedly the bad characteristics of the Cyprians, with few or none of the good ones, for generations. Mr. Benton explained that his remarks had reference to the pure races only. With regard to the *Apis dorsata*, discussion arose as to whether they might not be crossed with other races. Dr. Riley, the entomologist, thought that it would be impossible.

AFTERNOON SESSION, SECOND DAY.

We had the pleasure of listening to a short address from Assistant Secretary of Agriculture, the Hon. Edwin S. Willits. He came to present the compliments of the Secretary of Agriculture, and was authorized to say that the Secretary bid the convention Godspeed, and that it had his full sympathy. As for himself, he was very desirous of doing something for apiculture; but just what to do, he could not fully decide. So far as the Department which he represented was concerned in helping on the cause of apiculture, it met with many difficulties. The appropriations had been cut off during the past season, and they were obliged to suspend the special work at Lansing Apicultural Station. It was difficult to get the money, and also difficult to get the ear of Congress; and Congressmen themselves were ignorant of the thing they desired to foster. The Department had no thought of abandoning the effort of doing something for apiculture. The most it could do the past season was in the way of a compromise. The Department desired to contribute, in a small measure, to the support of apiculture, and it was for the *convention* to say what should be done.

DETECTING THE ADULTERATION OF HONEY.

We next listened to a paper by Prof. A. J. Cook, that set forth fully the difficulties, as well as what had been accomplished so far, regarding the methods for detecting adulteration. As the substance of this paper appeared in GLEANINGS, page 688, 1892, and again in Prof. Cook's article in our issue for Jan. 1, it will hardly be necessary to reproduce it here. Following Prof. Cook's paper was an address, or, rather, a sort of lecture, by Prof. H. W. Wiley, Chief Chemist. The professor explained very fully, with apparatus, just how honey was analyzed. As a brief digest would give no adequate comprehension of the subject, we asked the professor to let us have a written copy, which he has kindly done. The address is as follows:

ADDRESS BEFORE THE NATIONAL BEE-KEEPERS' ASSOCIATION HELD AT WASHINGTON, D. C., DEC. 28, 1892, BY H. W. WILEY, CHEMIST U. S. DEPT. OF AGRICULTURE.

Mr. President, Ladies, and Gentlemen:—

I have been much interested in Prof. Cook's paper on the subject of adulteration of honey, and am glad to have this privilege of complying with your request to add something more in the same direction.

After the publication of the results on the analysis of honey, contained in Part Six of Bulletin No. 13, the question was raised in some quarters, whether or not chemists were able to distinguish between a pure and an adulterated honey. Some of the samples which we examined, and which were purchased in open market in different cities of the country, were found to be adulterated with glucose; and it was claimed that such an adulteration was unlikely, and that the chemists had been mistaken. Prof. Cook took a great deal of interest in this matter, and asked permission to send a number of samples of honey and honey substitutes, designated only by number, to the laboratory of the Department of Agriculture, for examination. He also sent similar samples to the laboratory of Prof. Kedzie, of the Michigan Agricultural Experiment Station, and to Prof. Scovill, of Kentucky Agricultural Experiment Station. In all, 53 samples of honey were received at our laboratory from Prof. Cook, and these have been analyzed and the data transmitted to him. We have not yet been informed by Prof. Cook of the nature and origin of the samples, and therefore can not tell, as far as that is concerned, what success we have met with in distinguishing between the good and the bad; yet Prof. Cook has already published the fact that all three of the chemists engaged in this work have detected every spurious or adulterated honey which was contained in the lot. On the other hand, a few samples which were of known purity have been classed as suspicious, but not condemned as adulterated. The general result is, that the chemist, working with ordinary care, and with well-known processess, is able to detect all ordinary adulterations of honey, but at the same time he may include among the suspicious articles some samples which are genuine.

The special form of adulteration which we were expected to determine were glucose and cane sugar. Both of these adulterations are very easily determined.

Some samples of the honey received were obtianed by feeding directly to the bees cane-sugar syrup, which was stored rapidly, and at once extracted. Other samples were obtained from bees which were storing honey very rapidly from a known source, and this honey was taken as soon as deposited. These general items of information I have gleaned from the article Prof. Cook has already published in regard to that examination.

I am sorry not to be able to entirely agree with Prof. Cook in his definition of honey. A few years ago I defined honey as the saccharine exudation of flowers, gathered and stored by bees. This definition may properly be applied to any saccharine exudation of flowers or plants gathered and stored by bees, provided they are not aided in this matter by any artificial means. In other words, cane sugar which a bee would of itself extract from a *plant* would very properly be classed as pure honey when stored by the bees in the hive; but cane sugar *fed* to the bees in the form of syrup, and simply stored by the bees in the hive, could hardly be deemed a pure honey. This is a matter, however, which it is not within my power to determine, and I shall be much interested in knowing the result of the discussion now going on among your own members on what constitutes pure honey.

The problem of the adulteration of honey has been somewhat complicated within a few years by the discovery that certain honeys or saccharine exudations gathered by bees show at ordinary temperatures a right-handed rotation. Such honey was formerly supposed to be of coniferous origin, that is, gathered exclusively from pine-trees. Later it has been shown that such honeys are probably derived from exudations produced by the aphis, or plant-louse, either directly from the trees, through the influence of the louse, or through the organism of the louse itself. This exudation is commonly known as "honey-dew," and entomologists are undecided whether or not the honey-dew passes through the organism of the louse, or is the result of the attack of the louse upon the plant. At any rate, such exudations show peculiar properties; and it is doubtful whether, under the definition given above, they could be classed as genuine honeys. It is said by Prof. Cook,

that a number of the samples of honey sent by him were of plant-louse origin; but the numbers representing these samples are not yet known to me. I have, however, found in the number sent by him, six which are peculiar in their optical properties, showing a slight right-handed rotation not due to cane sugar, and which I would class as suspicious honeys. It is more than probable that it will be found that these honeys are of plant-louse origin.

Prof. Cook doubts whether or not a honey made from pure cane sugar, which has been stored for some time in the hives, can be detected from a genuine floral honey gathered and stored by bees. In the present state of our chemical knowledge, the doubt of Prof. Cook is well founded. I am confident that it will not be long before we shall be able to discriminate definitely between such articles of artificial honey and genuine honeys as those above mentioned. Investigations in this line have not gone far enough to enable any definite statement to be made now; but I can only say that the results are very hopeful, and lead to the just expectation of soon formulating a method of discriminating between the honeys mentioned.

One property of pure invert sugar will be found very valuable in such an investigation; viz., the fact that pure invert sugar, made from cane sugar, when examined in a polariscope at a temperature of about 88° C., is optically neuter—that is, neither deflecting the plane of polarized light to the right nor to the left. In every case of a pure floral honey which has come under my observation so far, it was found that, at the temperature mentioned, it showed a right-handed polarization. In two of the samples sent by Prof. Cook it was found that the honey examined at 88° showed a left-handed polarization. Now, this is due probably to the fact that the honey was partially crystallized, and the samples sent were the liquid portion, consisting almost exclusively of levulose, while the solid portion not sent would consist almost exclusively of dextrose. This is only a supposition on my part, as I have not yet learned from Prof. Cook the nature and origin of the samples mentioned. But every one will agree that a honey obtained by drawing off the liquid portion from a partially granulated honey would not in any sense of the word be a pure normal honey, any more than the residue would be. It is possible, however, and that must be mentioned here, that the nectar of some flowers contains naturally an excess of levulose, in which case the honey gathered therefrom, although left-handed at 88°, must be considered pure. These are matters which subsequent investigations will make clear.

Another important factor in the examination of honey is in the amount of reducing sugar, so-called, which it contains; that is, the quantity of sugar in it which is capable of reducing a copper salt to the condition of a sub-oxid. In all pure floral honeys it has been observed that the percentage of reducing sugar in the dry substance does not fall in any case below 85, while in general it reaches nearly to 90 or above. When, therefore, a honey is examined in which the reducing sugar is decidedly less in quantity than 85 per cent of the dry substance, it must at once be regarded as suspicious.

The percentage of ash is also a matter of some importance. It has been found so far, that, in the suspicious honeys in the samples sent by Prof. Cook, the percentage of ash is greater than in the honey which seems to be pure. Further investigations, however, will be necessary to determine whether this is a general rule or not.

Strange as it may seem, one of the most difficult things in the analysis of honey is to determine the amount of water which it contains. One of the simplest methods consists in drying a small portion of the honey in a flat-bottom platinum dish for about fifteen hours at the temperature of boiling water. Determined in this way, the average percentage of water in the samples of honey examined was found to be about 18. The lowest percentage found was 13.76 in a clearly adulterated sample, and the highest percentage found was 22.75 per cent in one of the samples which was abnormal in having still at 88° a left-handed polarization.

In general it may be said that it is possible for any one, who is disposed, to make a mixture of pure honey with a small quantity of certain adulterants in such a way that the chemist would be unable to detect the fraud; but such a method of adulteration would never be practiced commercially, because it would not be profitable. On the other hand, we may boldly say that, in all commercial adulteration, the chemist will be able to find the fraud, and that the skill of the chemist will doubtless keep pace with or excel the skill of the adulterator.

In the general examination made by the Department which has been referred to above, two particular samples of honey deserve a special word. In almost every market of the United States were found samples of honey labeled "Pure Old Virginia Honey," manufactured by Geo. K. McMechen & Son. In no instance was a sample of this honey found to be pure. All samples purchased in the open market were adulterated. Another peculiar sample of honey was labeled "Hoge's Horehound Honey," good for coughs and colds, and said to be gathered from a certain region in California. This sample was accompanied with the most enthusiastic testimonials, and also had a certificate of a justice of the peace in regard to the nature of the locality where it was supposed to be gathered. Several samples of this honey were obtained, and they were found to be pure fabrications, consisting of cane-sugar syrup with about 3 per cent of alcohol. They contained no honey whatever.

I have thought the members of the association might be interested in seeing some of the apparatus and reagents which are employed in the analysis of honey, and in looking at some of the operations of a chemical nature. I have on the table here the principal apparatus and reagents employed in such examinations, and which I shall take pleasure in showing the members.

(The polariscopes and chemical apparatus used in honey anlyses were exhibited and explained to the audience).

In conclusion, permit me to say that the work of the Department has shown that, of the liquid honeys on sale, bought in open market, nearly 45 per cent are adulterated. Every bee-keeper can see at once how greatly enhanced in price the product of his industry would be should such adulteration be prohibited and prevented. It is necessary that all should work together in harmony and in earnest to secure this result. The bee-keepers will find the Department of Agriculture hereafter as heretofore doing every thing in its power to detect and prevent the adulteration of honey.

To be concluded Feb. 1.

MOVING HIVES TO STRENGTHEN WEAK COLONIES, ETC.

DR. MILLER AND MANUM CRITICISED.

In "Stray Straws," found in the December 15th issue of GLEANINGS for 1892, I find this:

"A common error is to suppose that, in setting a weak colony in place of a strong one in order to strengthen it, it is important that the change be made when the largest number of bees are out. There will be just as much gain if the change is made at midnight." Usually we find Dr. Miller saying "I guess so," or "I shouldn't wonder," or "I don't know;" but here is a positive statement, made under his name, and, strange to say, that, in dropping his usual discreetness, he has fallen into an error which he would not have fallen into had he been so discreet as to say, "I don't know." But I imagine I hear him saying, "That is all right; let Doolittle prove wherein I am wrong." Well, that is just what I am going to try to do, doctor.

When a colony is in a normal condition, the young bees go out to take their first airing at the age of six days, if the weather is favorable; and in doing this they mark their location to a certain extent, but not to an extent great enough so but that subsequent flights have a greater impression on their memory, for we find them taking these markings anew at every flight till they are sixteen days old, when they leave the hive for gathering supplies for the first time, after which they take no more markings during the working season, unless it be in the case of a swarm, or some rude disturbance of their home. If the hive is moved at midnight, as Dr. Miller suggests, then, on the coming morning, all the bees over sixteen days old, upon going to the field, leave in a straight line, and, having the old location established in their memory, and not taking any markings that morning, come back to the spot where the old entrance used to be; consequently they go into the hive having the weak colony, if such has been placed on the old stand, or are lost, if no such provision has been made. But let us wait till about 2 o'clock P. M., at which time all of the bees under sixteen days old, and over six days old, will fly, if the weather is fine, and we shall find that these young fellows head toward the hive the same as they did the last time they were out before, hence notice the change which has been made, and, instead of going to strengthen the weak colony which has been placed on the old stand, they return to the spot last marked, hence do nothing toward the desired strengthening. Now, had Dr. M. waited about his changing till these young bees were in full flight, and moved the hives when the most of these young bees were in the air, he would have caught these also, in addition to *all* those which were over sixteen days old. Then, 100 of these young bees are worth fully 300 of the older ones, for strengthening weak colonies, inasmuch as they are just commencing life, instead of being near its close, as many of the field-bees are. While I had known that bees less than sixteen days old would not return to the old stand, if a colony in normal condition were removed at any time other than when they were flying, yet it was not fully forced upon me till I tried preventing after-swarms by the Heddon plan. In trying this I found that, if I moved the parent colony at any time I was ready, it would more often than otherwise swarm again; but if I moved it when the young bees were out to play I had a sure thing of it, for the colony was then so depopulated that it *never* undertook to swarm again that season.

LOADED FIELD-BEES IN THE SECTIONS.

On page 915 of the same issue of GLEANINGS I find an error in Bro. Manum's article, which error is also sanctioned by the one who wrote the footnote to the same. Near the close of the article, Bro. M. tells of introducing queens by letting them run down into the sections, and says that, in this way, "she is first introduced to loaded bees just from the field, or quite young bees, both of which," etc.; while the editor says, "Mr. Manum's idea of having a queen pass down through the sections among young bees and loaded field-bees is excellent." If loaded field-bees ever visit the sections to any great extent, all of my hours and days of watching to discover the inside workings of a bee-hive, when a colony was in it, have been in vain. I claim that not one bee in one thousand that returns from the field with a load of honey ever enters the sections till after it has disgorged that load. I have watched hundreds of bees come into an observatory hive whose colony was at work in sections, and never saw a *single* loaded bee offer to go up to those sections. On the contrary, the bee generally gave its load of honey to a young bee that was anywhere from one inch to six inches from the entrance through which it came in, and that young bee carried the load to the cell in which it was deposited, or held it for a while till it was evaporated, as the case might be, being governed by the number of loads coming in. Again, I have many times changed black or hybrid colonies to Italian, by changing the queen during the working season; and on the sixteenth day after the last black bee hatched, I have seen only black bees going in at the entrance with their loads of honey, while a look at the sections revealed scarcely any but Italians there at work, all of which were apparently as full of honey as they could hold. No, gentlemen, the field-bee gives her load to a young bee, and this young bee carries it to the sections. While this does not affect the plan of introduction in the least, yet a knowledge of these things can be of much help to us in many of the manipulations of the apiary. G. M. DOOLITTLE.

Borodino, N. Y., Dec. 26.

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

In a casual reading, or, rather, hurried scanning, of Cowan's "The Honey-bee" last spring, I thought it contained nothing but what was in my book, and said so in GLEANINGS. I find, upon closer study, that I did the work and its most able author injustice, which I hasten to correct. It is very full and accurate, and contains much that is new to English readers. It should be in every bee-keeper's library. Mr. Cowan gives the fullest credit, and has given us a work that is an honor to him and to bee-keeping. A. J. COOK.

Agricultural College, Mich., Dec. 19.

THE HEWES BEE-ESCAPE.

Friend Ernest:—After reading your description of Mr. Hewes' bee-escape, I thought, "Another step in the right direction, for I have been looking for some genius to invent a bee-escape that would be less complicated than the Porter, and answer every purpose." As you were stumbling over those irregular awl-holes, did it not occur to you that machinery made for the purpose would punch the cone-shaped perforations just as accurately for a bee-escape as any designed to make the queen-excluders? I hope you are not guilty of making fun of inventions simply because the name of some leading light does not accompany the model.

Belle Vernon, Pa., Dec. 20. A. B. BAIRD.

[We are not sure that certain fixed machinery in the shape of punches and dies would make the *ragged* holes that the common bradawl

does. However, we will try and test the matter next summer, when our machine-shop is not so rushed with orders for Cowan extractors, foundation-mills, etc. No, no! We do not make fun of models when not fathered by some leading bee-keeper; but when an insignificant device comes from such a one we have respect for it at once. See what Dr. Miller says of the Hewes escape on p. 7.]

FIRE INSURANCE ON BEES.

Tell Dr. Miller I have my bees insured in the "London Mutual Fire Insurance Co., of Canada," $5.00 on each hive, A. I. Root's chaff hives, and it costs me only 4½ cents per hive for a three-year risk. I have them insured along with my other property. ILA MICHENER.
Low Banks, Ont., Dec. 26.

Dr. Miller asks in one of his last Straws what insurance company insures bees against fire. The last clause of our Farm Property form reads as follows: "$600 on bees, bee-hives, and honey, on or in same premises." We are insured in the New York Bowery Co. Number of colonies covered by this clause is 100. H. P. LANGDON.
East Constable, N. Y., Dec. 24.

OURSELVES AND OUR NEIGHBORS.

HOW TO BE WELL: WHAT DID GOD INTEND WE SHOULD DO TO PREVENT AND CURE DISEASE?

Bless the Lord, O my soul, and forget not all his benefits; who forgiveth all thine iniquities; who healeth all thy diseases.—PSALM 103:2, 3.

You know already this is a subject that has been much on my mind. Is it according to the will of God, and did he intend in the beginning, that we should dose ourselves and physic ourselves with powerful drugs, both vegetable and mineral? Now, please do not think that I am going to commence a tirade against doctors and druggists. I certainly am not, for they are my personal friends, and I know that at least many of them are seeking for light, just as I am seeking for it; therefore my prayer in the outset of this article is, that God may not only give me *wisdom*, but *charity* for my fellow-men while I write. Perhaps one thing more I should say in the outset. I propose to use some very plain language this morning, and some of the friends may possibly feel that I am outstepping the limits of good breeding and decency. Therefore, dear friend, if you do not like my very plain health-talks, may be you had better commence right here to skip this article. I have decided to talk plainly, that I may be plainly understood, and that I may help a world of people in avoiding and getting rid entirely of some of these things that are almost disgusting to *talk* about in a home periodical. "Forwarned is forearmed;" and so if you read any further you must not find any fault. Perhaps I should add, no one has found fault yet, that I know of, because of my plain speaking; but some of the good friends in our home have felt greatly troubled for fear somebody would take exceptions to my plain language.

I have told you how I have been recently praying for light in this matter. I have told you, too, of that wonderful answer to prayer that still animates and inspires me when I think of it; namely, that, by the use of the wheel, I could perform muscular feats that might astonish even the athletes of a few years ago; and that, in so doing, I have found vigorous, robust health and physical enjoyment, such as I had never known before. It was to me almost a miraculous transformation, from a feeble, suffering invalid, to an individual who could travel by his own strength, unaided, forty or fifty miles a day, and *rejoice* in his strength like the horse that "paweth in the valley" and "rejoiceth in his strength." Of course, I am not riding the wheel now as I did in the summer time. The state of the roads will not permit it. Besides, such a course of exercise is hardly possible for *everybody* even in the summer, and possibly to only a few in the winter. Let me say, however, that I am still riding my wheel two or three miles every day. Yesterday the thermometer was down to only 15 above zero, but I rode several miles in perfect comfort, and kept warm without any trouble. Now, while I felt perfectly well during this excessive riding, there was a good deal of the time when there was manifestly more or less derangement of my digestive organs; and if I omitted my rides for two or three days, the old troubles were sure to come back. I wanted *more* light on the subject. I prayed that God would show me more; that he would enable me to discover what laws we were transgressing, and where we were blundering. During months back, different friends have been sending me, or suggesting, remedies, and I have been strongly urged to try various patent medicines. I have not tried any of them, however. I do not believe this is the way to do when we are sick—that is, generally speaking; and I never intend nor wish to come out in these Home talks, and tell you that "Dr. Blank's wonderful medical discovery" is the thing for sick people to take, especially if I am going to end my exhortations by saying, "Thus saith the Lord." Does that latter expression startle you? I hope it does. He who stands up in the pulpit, or he who stands anywhere else, and says to his listeners, "Thus saith the Lord," had better be very careful what he says. Yes, indeed should he be careful.

Now, if we shall not cure our ills by "taking something," what shall we do? What does the Lord tell us to do? Let me frankly confess, that, although I have studied the Scriptures considerably with this matter in view, I can not find that they tell us very much about it. The closing sentence of our text tells us very plainly that it *is* the Lord who does the healing. The Bible was not given us to teach astronomy nor any other science, nor even physiology, except that bodily health is so very closely connected with spiritual health that one, to a certain extent, follows the other. The Bible teaches, however, *very plainly* and clearly that we should avoid gluttony, and beware how we give loose rein to sensual appetites and feelings. No other book in the wide world has ever presumed to prescribe such a course of purity, self-control, and abstemiousness, as God's holy word. And I think I may say right here, that the "thus saith the Lord" is very plain and clear in this whole matter. We should eat to be strong and well, and not because it gratifies our appetites and taste. Enjoyment in eating is very well to a certain extent, providing we eat to live and not live to eat. A few days ago I had occasion to ask a man what his business was. His reply has been in my mind a good deal. It was something like this:

"All the business I have is to eat, and therefore I am out this morning hunting up something good to eat. What have you in your garden that will probably fill the bill?"

He did not say any thing more, but simply made his purchases and went away. I like the business of market-gardening and fruit-raising, because it furnishes the world with good and wholesome articles of diet—that is, generally

speaking; but if all my customers were like this man, I should lose my energy and enthusiasm pretty quickly.

Let us now consider why it is that our food so often seems to do so little good. Years ago, while in the city of Boston, a vender on the street was selling some sort of refreshing drink to crowds of thirsty people. He had a lot of glass jars placed right in the sunlight on a hot summer day. These jars were filled with pure water, to all appearance. In the water was something that looked like miniature white fleecy clouds. These little flocky clouds were alternately rising to the surface and dropping to the bottom, in a queer sort of way that attracted the attention of passersby. In answer to their inquiries he said, "It is the South American beer-plant. Won't you have a glass of beer? only three cents." Some pounded ice was stirred into the liquid, which was already foaming with particles of carbonic acid. The gas came up out of the liquid, much as it does from sweet cider, when it is just working briskly, and the beer tasted much like sweet cider. It was sweetened, and flavored with sarsaparilla, or something of that sort. The white particles that rose and fell resembled the mother plant in vinegar; and the operation would keep on indefinitely, provided the liquid was kept warm, and sugar or sweetened water was added as fast as the plant used it up. We afterward had some of the beer-plant in our house, and I studied the habits of it. I think what is called the vinegar-plant is closely allied to it—may be it is the same thing, for the product in every case becomes vinegar, if it is not used up as beer.

Some may ask whether this is a temperance drink. It is just as much a temperance drink as all home-made root-beers. Hires' root-beer, that is advertised so extensively in our agricultural and religious papers, is a fair type of them all. There are two things about these home-made root-beers that make them called for. One is the carbonic acid, the same as we get from soda water. This, I believe, is wholesome—at least, a moderate use of it seems to assist digestion and refresh one who is thirsty. The other element is alcohol. All beers made by fermentation, whether we use yeast or whether it is fermented, like sweet cider, contains a small percentage of alcohol. The more the cider has worked, the more alcohol it contains, and the same with the root-beer. I have seen home-made root-beer that was at least slightly intoxicating. As for lager beer, see what Dr. Miller says in Stray Straws in the previous number. Perhaps the good housewife who made it did not intend it should be so, but nevertheless it was. I need not stop here to tell you what the effect of alcohol is—at least, its ultimate effect. I do not believe we need it, in large doses or small doses, or in *any sort* of doses. That is my own private opinion. I am not yet ready to give it as a "thus saith the Lord." It *may* be useful as a medicine, but I very much doubt it. I have spoken of this beer-plant because it puts before our eyes this matter of fermentation. The beer-plant wants sugar, water, and warmth. It wants *warm, sweetened water*. The warmer the water, the better it suits the plant until you get to the point where it might be scalded. If you scald it, it is killed like any other plant. If it does not have sugar or starch in some form, to work on or *feed* on, it dies of starvation, like any other plant or animal.

When I was a small boy, part of my duties was to feed the pigs. I used to dip their feed out of a barrel—the old-time swill-barrel of our childhood days. In order to make it better we stirred in bran every day. Then the barrel was placed in the sun; and the bran, slops, and dish-water soon produced fermentation. I remember on coming near it on a hot day, that I could hear a peculiar snapping and foaming sound in the barrel, and bubbles were rising rapidly to the surface. You have all seen such things, I presume, in very hot weather. In the process of fermentation, carbonic acid was liberated in considerable quantities, and this made the snapping noise. The operation went on most rapidly during very hot weather. Well, since my poor health, when I felt distressed after eating there has seemed to be a sort of foaming and snapping sound in my bowels. It reminded me of the swill-barrel, and I felt sure the very same operation was going on in my intestines or bowels, or somewhere in that region, as used to be going on in that swill-barrel. Pretty soon there would be colicky pains—a general uneasiness, and a peculiar sort of headache. I craved something, I did not know what. Sometimes I wanted beer, as I have told you about; then I wanted fruit; but every thing I ate seemed to feed the trouble. Even a drink of water would very often give me more distress. Perhaps many of you are familiar with all this.

Toward 25 years ago my health failed, and I consulted Dr. Salisbury, of Cleveland, O. I remember of asking him if he did not think beer would be good for me, or Kennett ale, or something of that sort. He replied, "Why, bless your heart, my dear Mr. Root, you have got a beer-brewery inside of you already, and yet you would suggest *more* beer. Although you are not a beer-drinker, it is the beer-business that is killing you, and will kill you unless you stop it." Dr. Salisbury did stop the beer-business. I think I have told you about his remedy. In the first place, he turned me out of doors. He told me to buy a colt and break him myself, and learn to ride him. This I did. You see, the treatment was very much in line with the wheel of a few days past. I did not mind the colt very much — in fact, I rather *liked* the medicine. I would rather take a colt and break it than to take physic any time; so that part of the prescription did very well. It gave me a *love* for horses that I had never had before, and it will last me as long as I live. But the celebrated doctor said, furthermore, that I must stop swallowing *any thing* that would make beer or fermentation; nothing sweet or sour; but, above all things, not a particle of sugar; no fruit. As I did not get on to suit him, he finally cut off all the grains, and, as a last extremity, I was forbidden even graham bread. It was a scientific experiment with me, however, and I entered into it with my characteristic energy and zeal. For *eighteen weeks* I lived entirely on lean meat; and together with the colt and other outdoor exercise, I came out well and strong. That was the time I planted the basswood orchard. The doctor said my ranch must be at least a mile or two from the office, so I should not be worried too much with the cares of business. I got entirely rid of the "beer-brewery" in my bowels and intestines.

You may inquire why, then, I am not a follower of Dr. Salisbury at present, with his beefsteak diet. Well, it did not work with many other people as it did with me. A good friend of mine went down to his grave right before my eyes, in spite of beef diet. He had consumption, however, and could not stand horseback riding as I could. The lean meat was, no doubt, one factor in my recovery; but I think the colt was a greater factor. Again, I can not believe that God intended we should be restricted to animal food. I believe the fruits, grains, and vegetables have their places. Well, so did Dr. Salisbury. He believed that well people, who worked outdoors especially, should use all these things as a diet; but, of course, we

must beware of using them to excess. During the eighteen weeks that I lived almost entirely on lean beef, I became so tired of it that I ate just enough to give me strength to do my outdoor work and no more. It has many times occurred to me that moderate eating, even of other kinds of food, might answer almost as well. There is a trouble, however. The juices of fruits and most vegetables ferment quite rapidly. You can not get up a fermentation with just lean meat and water. There has got to be some sugar, or something containing sugar. While with Dr. Salisbury I was permitted to drink coffee without a particle of sugar or milk in it. Either one would start fermentation, or keep that beer-plant growing, to express it in another way. He said I might drink new milk, right from the cow; but I tried it and did not like it. I thought it would do well enough for babies, but I did not propose to be a baby. Does it begin to occur to you that hot tea and coffee, with plenty of milk and sugar, are just about the best things in this world to feed a beer-plant?* I use the word "plant" in two senses. A boy heard some men talking about an "electric plant" recently. He asked his father what kind of *fruit* grew on electric plants. The reply was, "currents" (currants). Now, many of us have—not an electric plant, but a beer-plant inside of our bodies. It is sometimes a pretty big plant, too, I am inclined to think, for it has been years in getting under way. It was probably started by *eating* too much; and I think I may say right here, without making a mistake, "Thus saith the Lord, '*Eat less*.'"

I have been getting some good points from a dentist lately. He dropped a remark, something to the effect that many people are dyspeptic because their teeth are too poor to chew their food properly. Is it not better to pay a dentist's bill and be well, than be sick and pay a doctor's bill too? In making nice maple syrup, it has been recently discovered the one *great* secret of success consists in boiling the sap just as soon as possible after it runs out of the tree. Fermentation commences more or less, even in cool weather, within an hour or two after the tree yields its saccharine treasure. All agree to this. Well, after we take the food into the stomach, if we are inclined to dyspepsia, it is of the utmost importance that the gastric juice proceed to digest it before it can ferment in the least. If the machinery is all in trim, nature does the work. But, my dear friend, the food should be *thoroughly masticated*. It should be chewed up and mixed with the saliva of the mouth until it is a sort of creamy paste. If you want to see how quickly the digestion of even a dyspeptic can work, if it has the right material, just have some graham gems for breakfast, then eat slowly and chew every mouthful until it is like cream, before you swallow it. The gastric juice will then take hold and make food and strength for your disordered nerves, in no time. It is just like taking the maple syrup and boiling it before it can spoil. Just try it and see. Many kinds of food will answer just as well as the gems; but I think they show the truth of what I am trying to teach, the plainest of any thing. While in Portland, Oregon, last winter, in such a fearfully disordered state, with nervous fever and indigestion, that high-priced doctor, you remember, cut off grapes, oranges, lemonade, and every thing of that sort, with a sharp veto. He said, "Not even a bit of meat nor any solid food." When I looked up at him appealingly he said, "My friend, you just drink for the present—straight milk; not another thing until I see you." I did not crave it, and I did not drink very much of it; but it began at once to fetch me out of my troubles. Dr. Salisbury recommended new milk quite vehemently, years ago, but I thought I could not drink it. Well, within the last few days I find I *can* drink it. Now listen: The milk right from the cow is like the maple sap when it first comes from the tree. There is no fermentation about it; and the quicker you get the milk from the cow, and into your stomach, the quicker can the gastric juice take hold of it; and, better still, if you are dyspeptic. Why, just now I *love* new milk, just as it comes from the cow! I suspect cows will be my next field of investigation. *Every family* should have *a cow*. Please notice how long I have been in learning this thing. Why, it took me 20 years to learn that I must have sleep more than once in 24 hours. Then it took me almost *25 years* to be taught that I *could* drink new milk, and would like it, if I only got in the habit of drinking it. Why! one so stupid and slow, and dull of understanding, does not deserve good health.

I am now going to say something that may not be in the Bible, and yet it *may* be there, in a little different wording, after all. It is this: Thus saith the Lord, "When you feel sick or run down, or out of sorts, do not try beer or alcoholic tonics or health invigorators; but at least make a good thorough trial of new milk, just as it comes from the cow." Like spring water from the hills, it is a beverage of God's own furnishing; and it contains just exactly the elements that are needed for the nutrition of a weak stomach, better than any thing that man has been able to fabricate, for it is *God's own gift*, provided by his merciful love and providence, for a sick and suffering world. When you eat your graham gems, chew them up to a creamy mixture, and then take a sup of new milk. If two teacupfuls distress you, take one cupful, a little at a time, while you are chewing your food. I think you can take two cupfuls or more after a while. You won't be likely to take too much. A word more about chewing your food fine. For some time back I have noticed that I can not eat apples without their giving me much distress. I said something of the kind to the dentist. He told me that, if I would take a knife and scrape the apple up very fine, as we sometimes do for babies, it would not distress me, and I found it true. On the same principle, one can eat a baked apple where he can not eat raw apples. But baked apples are a little more trouble than nice apple sauce. Select some apples that will cook up very fine; leave out the sugar, and you can eat quite a dishful with your gems and new milk, and not feel distressed.

It is of the utmost importance that a dyspeptic have plenty of sleep. This "beer-plant" will be very apt to keep you awake nights. It is very desirable to have the work of digesting your food done before you go to bed; therefore you should have an early supper. If five o'clock does not answer, have your supper at four; or, better still, do not have any supper at all. If you can have your dinner at two or one, it will be very much better. Be patient, and wait

*The following fact was given me by a former president of the Cleveland & Pittsburg Railroad. He drank his coffee without either sugar or milk, and gave this as an explanation: "When I was a young man I had a queer sort of headache that at times disabled me from work. The doctors tried different remedies, without avail. Finally some one said, 'Stop using sugar and milk in your coffee.' I told him that it was the sugar and milk mostly that I drank it for, and that I would almost as soon give up the coffee entirely. I tried it, however, and my headaches disappeared, and even to this day I can not drink coffee well sugared and creamed, as I used to have it, without a recurrence of those same headaches."

until nature gets accustomed to the new fashion, and it will work all right. If you feel weak and faint, with a gnawing and craving for something, which you think is caused by not having had your accustomed supper, in place of eating, take a nap. After you wake up you will be surprised to find that you are not hungry at all. It was habit only; it was nervous exhaustion; and although food might have given temporary relief, sleep is *ever so much* better. Make yourself comfortable before you try to go to sleep. If your feet are cold, warm them up well. When I am in a hurry I wrap up a hot soapstone, and lay my feet on top of it. Keep your body warm with a blanket, or in some other way. But the room you sleep in, even in day time, should be moderately cool. There should be plenty of fresh air; and, if you sleep on your side you had better double up your pillow, or support your head so there will be plenty of space all around your nostrils. Breathe through the nostrils when you can.

How about the new water cure? My friend, I am almost ready to say, that, if you eat and sleep and live as you should, you do not need the water cure *at all*. Nature will take care of that part of the business, and do it right. If, however, you are and have been running a beer-plant for years, the new water cure will prove a Godsend to you. A peculiar kind of headache that I have mentioned may be removed in a few minutes by getting this fermenting matter entirely out of the system, out of the way, even if digestion is not completed, and you lose the benefit of a great deal of your food. It is better wasted and thrown away than to have it distressing you and poisoning your system.

Now a word about your urinary and kidney troubles. Come to think of it, however, if you attend to the things mentioned above, these troubles will, I firmly believe, *also* take care of themselves. Let me tell you some of my experience. Ever since I have been using my brains to the extent I have been obliged to use them while attending to our business, and especially the office work, I have had what I have called urinary trouble. When called upon to do hard mental work there is a pain in the organs; and unless I urinate quite often—sometimes as often as once an hour—I suffer great pain and distress. Oftentimes it has seemed to me as though the refuse matter that should go off in the urine was getting into the circulation and poisoning me. Since we have had the Smead closet system in our factory I have got along very well in the daytime; but the trouble has been in the night. When I woke up, of course I got up and relieved myself. A great many times, however, especially of late, instead of waking up I would have distressing dreams and nightmare; and when I *did* get up, it was with the feeling that my whole system was poisoned. If I slept that troubled sort of sleep until almost morning, the difficulty did not pass away immediately. You can now readily imagine how I am thanking God this morning, when I tell you that, for almost a week past, I have not been up in the night at all, nor have I suffered any inconvenience. The relief was brought about in less than a week's time. First, I began chewing my food *very thoroughly*, as I have told you.* Then I substituted milk in place of my coffee. Finally I came down to just new milk. Last Sunday I had my dinner at two o'clock; and for an experiment I omitted my supper. I did not get up that night, and yet I suffered no inconvenience. On Monday I omitted supper again, and abstained from eating any thing, or drinking any liquid after twelve o'clock at noon. The result was just the same. Then I tried drinking just new milk at supper. It was so quickly digested and out of the way that it answered just as well as omitting the last meal entirely. Then I tried the new milk and gems; and I am at present satisfied that deliverance has come. I would have paid a doctor quite a sum of money who could have given such perfect immunity from all these troubles; and yet here it is, without money and without price. Perhaps I am stupid and dull. My friend, I fear there is a *world* of people who are stupid and dull. And then I am afraid, again, there are others who would rather *be* sick than to go without their supper and their tea, and their *hot sweetened coffee*. May be, however, when it is too late they may change their minds.

The above was dictated for our issue of Jan. 1, but was crowded out. Since then I have made some more discoveries. By the way, the matter of investigation in regard to the subject of food for nourishing our bodies reminds me strongly of my investigations with the hot-water pipes over in the greenhouse.† Some of our readers may, perhaps, think I am not conversant with our various health-books and health-journals. Almost every one published —at least in this country—is laid on my table; but I regret that so many of them—in fact, the most of them—seem to be in the line of vegetarian diet. Yes, our new books, even the one I have recently quoted from, strongly urges vegetarian diet. A good many go so far as to object to butter, milk, and eggs. My opinion is, they are all making a sad blunder. When Fowler & Wells came out so strongly with vegetarian teaching, years ago, I was a boy in my teens. I followed their teachings, and became an ardent disciple. For *four years* I ate no animal food of any sort, unless it was butter, milk, and eggs, and those I ate sparingly. When I went visiting, or even stopped at hotels, I annoyed and pained the good people in a way that I shall always regret, by my stupid and stubborn way of insisting that *I* was right and everybody else was wrong. The experience I had, however, in learning self-control, was worth much to me in after-life. Had I not learned to govern my appetite in early youth, it would have been very much harder for me when I lived eighteen weeks on lean beef; and it would have been much harder, too, when it became necessary for me to say, with the help of Christ Jesus, "Get thee behind me, Satan," in later life. Very likely there are people who are benefited by pure, strict vegetarian diet, and I would not say a word against it to such; but I would urge them to lay their notions aside sufficiently so as to do as others do when they go visiting. In the first place, the Bible

* From a new book just laid on my table, "Eating for Strength," I copy the following:

The conditions of perfect digestion are several, and may be mentioned here. The first is perfect mastication. If this is not accomplished, much of the food is not brought under the influence of the digestive juices and so is lost. Count Rumford calculated that one-fourth less food is required if it be perfectly masticated. The object of mastication is to break up the particles into a condition in which the digestive juices can be brought into immediate contact with them.

It has been stated that Mr. Gladstone is so impressed with the importance of perfect mastication that he makes a practice himself, and has taught his family to do the same, of giving each mouthful thirty-two bites—one for each tooth in a perfect mouth. It is no wonder that he is able to perform such an amount of intellectual labor.

†They have been running now since before Christmas, through the coldest winter weather, and not a valve has been turned, nor any thing touched, but the contents of the house are unharmed—*Jan. 9th.*

teaches most plainly that it was God's intention that we should get our food from both the animal and vegetable kingdom. Let any one of good sense and fairness examine the Bible with this thought in view.

Again, after having discovered what articles of food, if properly chewed, could be eaten without starting the beer-plant, I began to make some experiments. If you stir the mud in the bottom of a stagnant pool, a peculiar gas will arise. By inverting a fruit-jar, filled with water, right over the gas, where it is coming up, you can easily get the jar full and examine it. It is inflammable, and, if burned in the night time, it makes a very pretty experiment. Set your jar right side up; and while you hold a lighted match over its mouth, as soon as it is uncovered make the gas come out, and strike the flame by filling the jar with water from a pitcher. This gas is carburetted hydrogen, and is similar to common illuminating gas. There is another gas, a little different, but much more poisonous, called *sulphuretted* hydrogen. This comes from decaying vegetable and animal substances. It has so much the smell of rotten eggs that it is usually recognized by its odor. This latter gas is often produced in considerable quantities in the human body when the digestion is disordered. It is the product of fermentation. It is usually the gas that gives us distress and the colicky pains. I believe it is generally in consequence of overloading the stomach and bowels. The disagreeable smell that usually attends it will indicate the source whence it comes. Pumpkin pie has always been a favorite dish with me. In fact, it is a sort of traditional dish with our friends in the Eastern States. I presume it is healthful enough for most people; but I have noticed that it disturbs my digestion more than almost any thing else. I feel sure that I am not mistaken, because, when the gas comes up into my mouth, the odor of rotten pumpkins is most plainly and sometimes painfully apparent. I told you that I was going to talk plainly, so you must bear with me a little.

Another "Down East" article of diet is baked beans. I think this upsets me perhaps even worse than the pumpkin pie. Turnips, squashes, and quite a variety of garden vegetables, seem to be, at least for the present, forbidden to me—that is, if I want to be well and strong. I have consulted physicians in regard to the matter. They simply tell me that I had better avoid articles of diet that I find do not agree with me, or suggest that I might try soda, ammonia, pepsin, etc.; but I believe that all agree that it is just as well, or *better*, to be careful of one's diet. Another thing, I can not with safety eat any thing between meals—not even a little fruit. I mean, of course, when I am confined to the office, as I am for the greater part of the time now in mid-winter. When I was taking those vigorous rides I ate any thing that other people did, and at any time of day when I felt like it. Well, the testimony I have just given is certainly not much in favor of a vegetable diet, especially for invalids and dyspetics. No kind of animal food ever distresses me as do the vegetables I have mentioned

I once heard a very wise man say that, when he wanted light in regard to God's commands or wishes on any subject, we should consult *first* the word of God thoroughly. If that does not give us light, we may rest assured that help will come by making the matter a subject of prayer. Now, then, what does the Bible say in regard to *what* we should eat? In the fore part of the Old Testament there is considerable said about keeping flocks and using animal food. Pretty soon milk begins to assume a very prominent place; and by and by there are many passages referring to the use of honey. When God made promises to the faithful ones, of a land of their own, where they could be free from oppression, milk and honey are mentioned together; and one can hardly resist the conviction, when he reads there of a land *flowing* with milk and honey, that the expression was used as a sort of summing-up of the best things that could be desired. While I was praying over the matter, it came to me all at once with considerable force, that the next thing to go with milk, right from the cow, was honey. I told you before, that new milk is pure concentrated food from God's own hand. Let us look at honey. The nectar is secreted by the flowers just as the maple sap is by the trees; but instead of waiting for a pailful, or even half a pailful, the bees gather the nectar from some plants as often as every few minutes. Note what I have said in regard to the figwort. Then the bees seem to be God's trained workmen. They gather the nectar and boil it down, give it one step in the way of digestion, perhaps (as our good friend Prof. Cook insists); then they seal it up with more care and nicety and cleanliness than any good housewife or any canning-factory ever put up choice articles of food since the world began. Milk soon spoils; but bees have been doing a line of work in *preserving* one of the purest products of the plant, since the world began. And they do it with a skill that is absolutely perfect. I selected some nice comb honey, and ate it with my gems and new milk. No sort of disturbance resulted at all. Although sugar, and especially yellow sugar, and cheap syrups, are about the worst thing a dyspeptic can eat, I discovered that I could eat good *honey* with my new milk, for supper, breakfast, or dinner, and in almost any quantity, with perfect impunity. The result to me was astonishing; and this corroborates what good father Langstroth has told us about taking lots of milk with honey whenever we eat it. The Bible has coupled them together, and they seem to belong together. If you eat sugar or candies, and then drink milk, the milk has a sort of sour taste in the mouth afterward; but after eating honey, most people can take milk with a peculiar relish. No matter how much honey you eat, it does not make the milk lose its richness nor sweetness. In fact, it is just the *other* way.* Now, I have many times decided that honey was not good for me, as you may remember; and it would not be good now if I ate largely of other things with it, perhaps only half chewing any of them, and then washing it down with strong coffee and milk. No doubt there is a long list of pure foods which will be as safe as milk and honey—strawberries and other fresh fruits, for instance. Out of deference to Dr. Salisbury, I must not omit to say that home-made beef tea, and the juices of good meat, seem to answer almost or quite as well as new milk; but I think it is better for me to have my *solid* meat for breakfast or dinner, or just before I take vigorous exercise, making a supper of gems, honey, and new milk,

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*Sugar is not honey, and honey is not sugar. The test I have given above would of itself decide which was a syrup made of granulated sugar and which was honey. Of course, refined sugar is very much better for weak stomachs than cheap sugar or cheap molasses; and on this account they use the best refined loaf sugar for feeding babies that can not have the mother's milk; but I am much inclined to believe that real nice well-ripened honey would be much better for babies than the best refined loaf sugar in the world. Before adding honey to my gems and new milk I used to get faint before the next meal. After the honey was added, however, my strength held out full and strong. You see, I have got on to what our agricultural writers call a "well-balanced ration," and one that does not feed fermentation in the least.

and making it a light meal at that. And I would earnestly advise omitting supper entirely where it interferes with perfect rest at night. The modern fashion of having *dinner*, as they call it, after dark, is a fearful innovation. Why! it makes me almost furious when I think of the wholesale way in which the senseless tyrant Fashion presumes to undermine and break down the health of the coming generation. If the old sinners and devotees of fashion want to kill themselves off in that way, let them do it, and be out of the way of setting such a bad example for people of sense. But I for one feel like thanking God that it is in the bounds of reason to expect to live 80 or 100 years—yes, and keep strength, enjoyment, and happiness.* When I come around to see *you*, my friend, riding one of the modern wheels, even at 75 years old, then you will believe what I say, and may be you will believe me also, when I tell you the rules of health, and the food God has provided for us to eat, are plainly described and pointed out in his Holy Book.

NOTES OF TRAVEL

FROM A. I. ROOT.

WASHINGTON, D. C.

Very reluctantly we decided to omit the proceedings of the first day of the national convention, as we could not well arrange it without at least a little Sunday travel. Another thing, I was very anxious to see Pennsylvania by daylight. By taking a sleeper at Cleveland on Monday night, we should be ready for the morning train that leaves Pittsburg a little after daylight; and, at the same time, if the train reached Washington on time we should be able to take in at least a part of the evening session. It so happened, however, that the train was late, so we missed the first day entirely. Tuesday morning, as soon as it was light enough to see, my face was close to the window, watching for a glimpse of the beautiful Ohio River; and I was rewarded by getting quite a view just before we came into Pittsburg. As there was but a short time between the arrival of our train and the departure of the next, we breakfasted at the lunch counter in the Union Depot; and it is not a very bad place to breakfast, after all. Excellent appetizing dishes in great variety, and at a moderate price, were smoking hot for the throngs of hungry travelers. In Pittsburg they have a waiting-room for ladies, where no men are admitted under any circumstances; at least, the notice says "positively;" and I believe it is rather the nicest waiting-room for ladies that I have seen anywhere. This fact seems to reflect a little on the lords of creation. A glass of excellent milk cost only a nickel, and the dimensions of the glass were so great that it held pretty nearly a small pitcherful. Good for Pittsburg! By the way, I found excellent milk everywhere, at a nickel a glass. Why in the world should anybody want beer, or even tea and coffee, when they can get both food and drink at such an insignificant price?

I for one am very sorry that the natural gas has failed in Pittsburg to such an extent that they have been obliged to go back to coal and its attendant soot. In fact, the morning sun had a tough job of lighting up the city, even in broad daylight. Why didn't somebody ever tell me of the wonderful number of manufactures of different kinds lining the railroads for miles out of Pittsburg? We used to think that "Down East" was the place for machinery, and for manufacturing establishments by the acre; but I very much doubt whether there is another spot on earth where immense factories are scattered over the landscape so thickly as they are for forty or fifty miles out of Pittsburg. I suppose one reason is, that Pittsburg has unlimited material, such as coal, gas, iron, stone, slate, oil, and ever so many other things, without end; and the way the towns are growing up, it looks to me as if Pennsylvania were soon to have *boys and girls* without number, to take care of these beautiful factories and railroad enterprises. It is true, Pennsylvania has not many prairies and level plains—at least, I did not see them; but she has grand hills and beautiful rivers. I was very much interested when I found our route lay along the Conemaugh Valley, and right through the little city of Johnstown, that has become so celebrated all over the world. God grant that she may never have cause for such notoriety again in *that* line. But enterprise and industry have so built up the place that there are now very few traces of the flood. Great buildings, bright and beautiful in their newness, have taken the place of those destroyed by the flood; and were it not for the fearful loss of life, one might be tempted to think that the flood was not such a very bad thing after all.

Even though every thing was covered with snow, the landscape was full of interest to me. Although we did not go through the oil part of the State, strictly speaking, yet the derricks at some points were pretty thickly scattered over the landscape. The mountains are not as lofty as those in California, as a matter of course; but some of them are very pretty; and as only a few of them are too high to admit of agriculture, it looked pleasant to me to see good fences, cultivated fields, etc., for the most part, even through the mining districts.

Toward eleven o'clock I felt a strong tendency to take my accustomed nap before dinner; but there was so much to see that I feared I might lose much of importance. Ernest and Mrs. Root, however, promised to awaken me if we should pass any thing of very great interest. I had been watching for the Horseshoe Curve, and making a great many inquiries in regard to it. When I did wake up and take a look across the great valley it reminded me very strongly of the California views, and I began to scold because they came so near letting me go through it asleep. Just then Ernest declared he could see a locomotive and accompanying train away off in the distance, at the further end of the valley. Sure enough, there was another railroad, away off there on the mountainside. The train was coming right toward us too. Then we came to a jumping-off place, as it seemed; but the locomotive decided not to jump off—at least, not that day: so it began, circling around the mountain. Pretty soon I ejaculated, "Why, that other railroad comes right up and crosses this one. See! over there it is, close by us." In just a few minutes more I went on: "Why, what a stupid lot we are! *This* is the Horseshoe, and that is our own road over there. We are just going back into the mountains around a curve, and then we are coming out right across the valley." My companions thought it could not be; but so it was, sure enough. Even had the company decided to put in an immense bridge across this valley, it would have been going down hill too fast, and so they made that circle out on the mountains in order that they might get down a little

* Yes, and to "smell good" too. A baby, when it isn't overfed, is as sweet as a violet; some of them keep that way until old enough to hear their husbands tell them so, and I verily believe it is *possible* for *both* husband and wife to keep that way all the time.

more leisurely. Taking it all together, this Horseshoe device, with the wonderful scenery across and down the valley, is one of the finest pieces of scenery I ever met on any railroad; and I am determined, Providence permitting, to have a view of it some time in summer. There are many beautiful rivers along this route—the Susquehanna, for instance. As we reach Baltimore it widens out into beautiful little lakes in many places. I can not tell you about the scenery as we got into Delaware, as it was after dark. As they were behind time, they hustled us into Washington at a pretty lively rate, and for the first time in years I had a little touch of car-sickness. Ernest thought it was owing to the rapid running; but I insisted that it was because I drank a cup of coffee along in the afternoon. I did not particularly want the coffee, but they called out only so many minutes for lunch, and I didn't see any milk handy, so I took the coffee. Unless I change my mind, I do not believe I shall drink any more coffee, at least hot coffee—come to think of it, I am not going to say "as long as I live," after all, for I believe it will be much better to take coffee, and say nothing, than to annoy the very kind friends I always meet when traveling, and make them think I am full of whims and notions. No, I do not mean that I will take a glass of *beer*, just because the crowd does; but beer and coffee are very different things. When I can have my choice I am going to take milk; and when I can not have my choice I am beginning to think I won't take any drink at all when I am eating.

In all my travels I do not think I ever stopped at a hotel more comfortable, and more complete in its arrangements, than the Randall House, in Washington. I have put up at hotels where they charged more money, but there was something lacking. At the Grand Hotel, in San Francisco, we paid large prices, and things generally were fine; yet we were kept awake at night—at least Mrs. Root was—by the rats frolicking all over the premises. Just think of it, friends! rats in one of the finest hotels in San Francisco. Other great hotels do not have rats, but they almost always have something. The Randall House did not have *any thing* but comfort and peace. Very few waiters were needed, for every thing went by machinery. The house was warmed by steam, and it was a very easy matter for the occupant of the room to have exactly the temperature desired. When they get our railway coaches up to that notch of civilization, they will be far ahead of what they are now. The water-closets at the Randall house were especially to my liking. Every facility for keeping yourself clean and sweet, even including a nice new modern bath-tub, was close by the door of every sleeping-room.

Just about as soon as I could get my head on the pillow, the car-sickness and every thing else, so far as I was concerned, vanished. As soon as it was daylight next morning, the first thing that met my eye as I looked from the window of our room was a sign, "Columbia Bicycles to Let." Mrs. Root and I went out for a walk first; but she knew how I was longing for a wheel to try those beautiful paved streets, and so she soon excused herself. I had pictured to myself the enjoyment of having a wheel with a pneumatic tire like my own; but when the man in the store said there was not a pneumatic tire in the whole city of Washington, for *rent*, my hopes took a fall. He added, however, that the cushion tires were just as good. I did not tell him so to his face, but I will tell you, dear reader, that he is a naughty, wicked man. He gave me a wheel that he called a Columbia; but it was so shabby-looking I at first refused it, and accepted it only when he said it was the best they had. It was stiff-necked, and hard on the bit; and I had had been so accustomed to twisting and turning everywhere with my own wheel that this thing came pretty near getting me into several scrapes. It ran before the street-cars, and would not turn until I "yanked it" with all my strength. Never mind; I enjoyed it notwithstanding. As soon as I got it tolerably under my thumb, I hied me away to the Washington Monument. It looked very tame at a distance. Why! when a mile away you might almost call it a whitewashed smokehouse. It is much like the mountains in California. When you have traveled right toward it for half a mile, it is further off than when you started; but it keeps looming up, and increasing in size. When I reached its base I got off my wheel and tried to look up; and then I began to realize that it was in truth the tallest piece of masonry on the face of the globe. More of this anon.

It was getting to be almost time to open the convention, and I wanted to see the Capitol. It was about a mile away; but I had got the hang of my wheel well enough so that I made the mile pretty quickly. First I circled around it on the beautiful walks, admiring the statuary, etc. Then I brought up before the entrance. I do not know that I have ever felt much impressed by statuary; at least, I have not of late years been much attracted by the nude figures we see in art-galleries; but as I stood before the entrance of the Capitol of our nation, a group of figures in white marble took hold of my whole being as no work of art has ever done before. I forgot my wheel; I forgot the frosty air, and every thing else. The figure I am going to describe stands at the right of the entrance. A sturdy wood-chopper in his shirt-sleeves, with his hat thrown off and his shirt-collar turned back, holds in his muscular and sinewy grasp a savage of the forest. The scene probably refers to earlier days. The savage has in one hand a tomahawk, and in the other a scalping-knife. The wood-chopper stands a little at his back. He has grasped the savage by the wrists, and holds him with such an iron grasp that his captive can scarcely move. The face of the latter shows a fury of hate and rage. He looks like a baffled demon. Then as the eye rises to the manly face above him, beaming with kindness, intelligence, and love—yes, there is even love for his enemy depicted in that face—the expression that shines forth from the still cold marble speaks more eloquently than words. As I gazed on it I was so much overcome with emotion that I could not speak. I almost panted for breath. The marble seemed to say to me, in words more eloquent than those of the most finished orator, something like this: "My friend, I am more than a match for your savage strength and fury; but please believe me when I try to assure you that I would not willingly be your enemy. We come here to these new shores, not to fight you and plunder you of your possessions. We come to teach you better things than skill in using warlike weapons such as you hold in your hands. We come to bring you the glad message of peace on earth and good will toward men." Dear friends, what can be more appropriate than this wonderful piece of statuary for such a place as this, the emblem and motto of the work the United States hopes to do with the rest of the world? It is our mission and our work to conquer and control sin and wickedness. Our laws are good and wise, and it behooves us to enforce them. But may God help us to enforce them with kindness and love.

While we take the revolvers and bowie-knives out of the hands and pockets of the out-

law—while we fetter him hand and foot, so long as his purpose is evil, may God help us to do it as does the man in that marble picture. He is using the bones and muscles that God gave him, to conquer the brute nature of the savage; and then he looks into the face of the poor ignorant, untutored child of the forest, and teaches him that wonderful truth, with all its grandeur and beauty, "Love ye your enemies; do *good* to them that hate you."

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Butter and honey shall he eat, that he may know to refuse the evil, and choose the good.—ISAIAH 7:15.

ON account of our trip to Washington, the promised additional notes from New Orleans will have to be omitted for the present.

WE would call especial attention to the valuable article by Mr. P. J. Baldensperger, on page 53. It will be followed by several others equally good.

GOOD FOR FARMERS.

YOU know that I am always glad to see the prices of any thing that farmers produce go up. Just now I am glad because pork has gone up to 7½ cts. Some may urge that it may come hard on many poor people because they have to pay more. Yes, that is true; but when farm products get so high that poor people find it hard to pay for these things, then they can go out into the country, and occupy some of these deserted farms and raise their own pork. See?

THE WEATHER UP TO JAN. 12.

FOR the past few days we have had the coldest weather we have had in several years; and should it continue many more days, we fear the little pets outdoors will not have a chance to turn over and get to a fresh supply of honey; for we have observed that, sometimes during a long stretch of cold weather, a few clusters will eat away the honey all around them, and finally starve because they do not or can not move to where the honey is. But there is one encouraging feature: The hives are nearly buried under the snow.

DR. MILLER PRESIDENT OF THE NORTH AMERICAN FOR 1893.

AT the last two conventions of the North American, we have heard expressions on every side from members, to the effect that Dr. Miller should be the presiding officer when the meeting assembles in Chicago at the World's Fair. Almost every one acknowledges that he makes the best presiding officer of any of the bee-keepers; and there has been a feeling for three or four years back, that the meeting at Chicago would be the greatest and most important of any convention in the history of the association; and, of course, it was nothing more than natural that those present at the Washington meeting should elect Dr. Miller as president for 1893. Mr. Frank Benton was put in as secretary; Mr. J. E. Crane as vice-president, and Mr. G. W. York as treasurer. With such a quartette we may hope for great things at the convention which is to be held some time near the middle of October, this year, at Chicago. Some may think that we should divide the honors, and that, as Dr. Miller has been president for two or three terms, some one else should have a chance. It is not a question of conferring honors, but it is a question of getting the best man in order that the best kind of convention may be assured, especially this year.

A SCHEME FOR IMPORTING APIS DORSATA AND APIS INDICA.

IT will be noticed in another column, that Mr. Benton says that the *Apis Indica* are very small bees—so small, indeed, that they might be adapted to the small flora of our country, without detriment to other bees. We saw some dried specimens that were very beautiful; and those who have a liking for five-banded bees will take a great fancy to them. But we were not interested particularly in their markings, but in their adaptability to small flora; and we have been wondering whether we did not have some subscriber in India who could procure for us these bees. We could furnish mailing-cages that we feel sure would deliver the bees to us alive and in good order; and is it not barely possible that there are some among our subscribers, especially among the missionaries, who could in a similar way, deliver to us the *Apis dorsata?* We feel quite sanguine that, if bees can be secured by some subscriber in their native land, we could send such cages as would bring them safely to us. We are willing to pay quite liberally for the bees, and therefore solicit correspondence; and while we do not anticipate that either the *Apis Indica* or *Apis dorsata* would be any great acquisition from a practical standpoint, yet there are many in this country who would like to study them on account of their physiological differences.

AMOUNT OF ADULTERATION, ACCORDING TO THE CHEMISTS.

ELSEWHERE in this issue, Prof. Wiley says that nearly 45 per cent of the liquid honey on the market was found to be adulterated; and while we will admit that, under our silence, adulteration has grown, yet it is very hard for us to believe that so large a per cent of the liquid honey found on the market has been mixed with inferior ingredients. Mr. Muth's honey was classed as adulterated. If, indeed, it was, Mr. Muth was an innocent party. In fact, he has been one of the most aggressive, in the matter of fighting adulteration, of any bee-keeper in our ranks. Being a honey-buyer and a honey-seller, he has felt the evils of it, perhaps, more than any one else; and while we now give the chemists credit for competency and honesty of purpose, yet it is very possible that their methods will cause them to call a few honeys impure that are really pure. For instance, we know that, of the 53 samples submitted by Prof. Cook for analysis, at least three pure honeys of extra fine quality were classed with honey mixed with cane sugar. See Prof. Cook's article, page 688, Sept. 15, 1892. We also know (see Prof. Wiley's address, this issue) that plant-louse nectar offers certain complications; and we think, therefore, that a little of this louse secretion in pure honey *might* throw them off the track. But it should be observed, that the chemists picked out all the *glucose* mixtures that Prof. Cook sent them, without a single mistake. This is encouraging.

THE WASHINGTON CONVENTION ON INCORPORATION.

OUR readers will remember that a few of our Canadian friends took umbrage because the bee-keepers on this side of the line thought it good to have the N. A. B. K. A. incorporated under the laws of the State of Illinois. One of the prime movers in this protest was Mr. W. F. Clarke, and in accordance with his former pub-

lished determination he sent in a paper protesting, and asking the association to rescind the articles. On the principle that, "if meat maketh my brother to offend," etc., we moved (a motion that was carried) that the matter be laid on the table, with a recommendation that it be favorably considered at the meeting at Chicago. As we were the only member present of the original committee who proposed the feature of incorporation, and as the attendance at Washington was small, it did not seem to us that it would be fair to the other members of the committee, as well as to the greater number of those who usually attend, and who were not present, to go ahead and rescind. But it may be asked, "Why should we consider the matter at all?" Simply this: As a few of the Canadians seem determined not to understand properly our motives, it is possible that we may set aside incorporation without detriment to the association; and particularly so as the Bee-keepers' Union *now* promises to do just exactly what the North American was expected to do under incorporation. If another year will prove this, then we could drop the articles of incorporation, and thus establish friendly feelings all around. We should not be surprised if the Chicago convention would vote to retain incorporation, because, as it is, it does no harm, and *may* do good.

THE COLD PROCESS OF MAKING SYRUP. PROF. COOK'S EXPERIENCE WITH SUGAR HONEY THEN AND NOW.

JUST after our general department of contributed articles had been closed up, the following article came in. As we propose to have no further discussion on the sugar-honey matter after this issue, we give place to the article here. It will be found to contain some excellent suggestions.

To what Mr. Ch. S. Haas has said on page 24 about the cold process of making sugar syrup, I would add that, according to Ure, one pound of cold water will dissolve two pounds of sugar, making a syrup the specific gravity of which is 1.326. This is a little over 13¼ lbs. to the imperial gallon, or a little over 11 lbs. to the wine gallon, used in the United States. If this syrup is fed to bees cold, they will take it slowly; but slow feeding has an advantage in the fact that the bees have time to secrete and add to the syrup the ferment which prevents it from crystallizing in the combs, and which, Prof. Cook says, changes it into honey; but to secrete this ferment in sufficient quantity the bees must have access to pollen. A few years ago, when the pollen theory was up for discussion, Mr. Heddon fed his bees hot syrup in his rapid feeders, at a season when there was little or no pollen to be gathered. The syrup was stored in the combs as free as possible from pollen; but in the winter the bees died, from the effects of cold, as was said by Mr. Heddon, and no doubt he was correct, because it is known to physiologists that, in order to assimilate the carbohydrates and get their full heat-producing effects, nitrogenous food is necessary to start and keep the assimilative changes in motion. Mr. Heddon sent some of those dead bees to Prof. Cook, who, assisted by Prof. Kedzie, examined the contents of their stomachs and viscera. They found no pollen, but the bees were loaded with syrup. The furnace charged with fuel, so to speak, was ready, but it lacked the nitrogenous element to start the fire and keep it burning. On tasting the contents of the honey-stomach, Prof. Kedzie said, "Why, that's sugar." This was a case in which the same sugar syrup fed to bees in the fall, and sealed over, and taken by the bees again as food in winter, remained sugar syrup still. I place this case in evidence in opposition to the verdict of Prof. Cook's forty students. The account of the matter was given in GLEANINGS, by Prof. Cook himself.

To liquefy sugar by the cold process, on a large scale, I would suggest the use of the extractor-can, or a large honey-tank, in which several barrels could be treated at a time. Simply put the sponge in the honey-gate, and, after filling up with sugar, pour in not more than half as many pounds of water as there are pounds of sugar; let it stand till the water becomes saturated, then open the tap and let it drip. At my out-apiary I intend to try this plan next fall. S. CORNEIL.

Lindsay, Canada, Jan. 8, 1893.

It is strange we did not think of inserting the sponge into the gate of the honey-extractor. We believe it will work just as well as the arrangement we described in the last GLEANINGS, and be far less trouble to put into application.

THE GLUCOSING OF DARK HONEYS; THE POSITION TAKEN BY MR. JAMES HEDDON.

BY the report of the proceedings of the Michigan State Bee-keepers' Association, Mr. Heddon offers quite a lengthy argument in defense of adulterating, saying that it helps the sale of the poor dark honeys, because they will stand a large quantity of glucose. He says truthfully, that, "there is no trouble about enforcing the law against murder, because people dislike to be murdered;" but when he says that enforcing laws against adulteration is impracticable because the public care very little about the matter, he is surely mistaken. The public does care. Again, he says broadly, "I think the adulteration of honey has never injured bee-keeping; that it has, rather, been a benefit." And, again, quoting, "If we are going to fight adulteration, let us decide *why* we fight it. If it does not injure us, then why fight it?" And, once more, "All this talk about adulteration is the height of folly." We regret exceedingly that any one in our ranks should take such grounds as these; and we are sorry that even Prof. Cook should go so far as to say that, *if* the addition of glucose "to some grades of honey really improves them, and aids in their sale, I have said my last word against adulteration." Replying to Mr. Heddon, we will say that we know positively that the adulteration of honey by glucose has injured the bee-keeping interests, else why is it, in this year of great scarcity of honey, the extracted article fails to go up in price? In fact, it rules just about the same as it does in years of plenty. There was a time, and not more than three or four years ago, when very little honey was adulterated; but now things have changed; and if the continual *harping* on the subject is bad, that *silence* which lets the evil go on unrestrained and unchecked is *tenfold* worse. If circumstances were only such that we dared reveal some things that we know—well, we won't make any threats. Referring to the quotation from Prof. Cook, does he not see what a fearful flood of fraud and adulteration the admission of his argument would bring upon the country? Does he suppose for a moment that adulterators are going to stop at dark grades of honey and glucose in order to give the dear people something better than real floral honey? A little stream of water over the edge of Conemaugh dam "improved," perhaps, the water below; but it did more than that; it let loose death and destruction in its wake. Now, it is possible that neither of the gentlemen above named have been correctly reported; but as Mr. Hutchinson acted as reporter, and is unusually careful and accurate, we presume the quotations are not far from correct. To have such "heresies" advanced by the president of the Union, now on the very eve of starting a well-organized effort to suppress adulteration of honey, is too bad. If bee-keepers should *not* be unanimous in this fight, if some of them should propose sugar comb honey, and others countenance adding glucose to dark honeys, where would we be coming to? Verily, the foundations of the bee-keeping industry would be threatened. Such a

state of affairs must not come, and will not, because we believe that neither Mr. Heddon nor Prof. Cook would be willing to hazard the industry or even run the risk of doing so. Surely Prof. Cook and Mr. Heddon will reconsider.

THE SUGAR-HONEY DISCUSSION; THE FINAL STATEMENT OF THE CASE SO FAR AS GLEANINGS IS CONCERNED.

WE have received hundreds of letters protesting against the proposed practice of feeding bees sugar to produce comb honey, and they are still coming in. The Illinois State Bee-keepers' Association condemned it; the Michigan State Bee-keepers' Association, as we infer from the report, did not favor it; the Washington convention said as little about the subject as possible; and when it did, it put it in such a form that the reporters could not get hold of it. Nearly all the bee-papers have entered a decided protest, and now the matter is getting into the agricultural periodicals, and is being roundly condemned there—particularly in the *Ohio Farmer*. We are glad that there is a universal sentiment against it, and we are sure that our friend W. Z. Hutchinson has no inclination to bring it up again; and that neither he nor Prof. Cook, knowing the facts, would care to run counter to the great mass of bee-keepers, the bee-journals, and the agricultural press—not because they would be *afraid* to express their honest opinions and convictions, but because they would not willingly further countenance something that manifestly would work injury to the industry. And now, as a closing sentiment, we wish to make a brief quotation from an editorial in the *American Bee Journal*, which we most heartily indorse:

Nearly all agree, that, even if it might prove profitable to thus feed sugar, it would almost certainly be too dangerous and risky a thing to do for the good of the pursuit of bee-keeping. There is no need of trying to walk safely over quicksands, when we *know* there is a pathway where safety is unquestioned.

Later.—Since the above was in type, the following editorial, which will appear in the next *Bee-keepers' Review*, entirely justifies the good opinion we have all along held of Bro. Hutchinson, and that he would drop the matter if he were shown that the discussion was unwise. It is indeed true, that "an editor has an opportunity that is accorded to no other, to place his finger upon the public pulse;" and Mr. Hutchinson, with his usual editorial sagacity, is not slow to interpret it.

THE SUGAR-HONEY DISCUSSION HAS GONE FAR ENOUGH AT PRESEST.

I said I had more articles on sugar honey that would be published in due time. Perhaps their authors are wondering why they are not. The reason is, that the bee-keeping public is opposed to the discussion. An editor has an opportunity that is accorded to no other, to place his finger upon the public pulse. In the hundreds and hundreds of letters that have come to me in the past month, and from the bee-keepers that I have met at three conventions of a national character, I have learned that there is a strong opposition against even the discussion of the raising of honey by feeding sugar to bees. In some instances this opposition amounts to a *bitter rage*. Some of you may remember the pains that I have taken in the past to learn what course in the getting-up of the *Review* would be the most acceptable. Well, when it has been shown to me so clearly that this discussion is distasteful to the majority, what folly to force it upon these unwilling readers! I have several most excellent articles upon this subject. One is from Mr. Daggitt, in which he calls attention to the fact that it is the floral *flavor* of honey that gives it its chief value. Illustrations and evidence are given at length. Again, this very morning, I have received from Frank S. Aby, Director of the Histological Laboratory of the Iowa State University, a most able paper discussing the question most thoroughly from scientific, ethical, and economic standpoints. He supports Prof. Cook, and says that the opposition comes from the ignorance of bee-keepers on chemical and physiological points. It seems a pity that this subject can not be thoroughly and calmly discussed in all of its bearings; but with the present feeling, its continuance would only stir up bitterness, and I think the best thing that can be done is to drop it right where it is, at least for the present.

We hope no one will berate or feel unkindly toward Bro. Hutchinson. His course all along (as was also Prof. Cook's) on the sugar-honey matter was actuated by the best of motives. Prof. Cook, by a letter just at hand, shows that he is in entire harmony with the sentiments expressed by Mr. Hutchinson above.

Still later.—After having received the proof of the editorial that will appear in the *Bee-keepers' Review*, another letter comes from Professor Cook. It reads as follows:

RIGHT ABOUT, FACE!

Dear Mr. Editor:—In studying the development of nature we find that there are retracings as well as advancement; retrograde as well as progressive development; such retrograde movements being, for the time at least, for the best. Hence if I call to myself for a halt, or even a wheel-about, I shall not be a single exception.

SOME HISTORY.

Until the past summer I have never regarded sugar syrup, transformed and stored by the bees, as honey. I knew it was transformed, but I did not think it honey. The serious nectar-dearth for the past three years, which I saw drive many bee-keepers from the ranks, so that, where we used to have large and enthusiastic associations, we now have a mere baker's dozen interested, or often none at all, made me very solicitous to find a cure for this terrible evil. I hoped, though faintly, for some relief by special planting of most promising honey-plants. I entered energetically into the experiment of such planting on a large scale, only to prove conclusively, as I think, that there is no solution of the trouble in that direction.

Last year, when Messrs. Hasty and Hutchinson discussed sugar-syrup honey, I had no sympathy with the move. I thought of it in the light of adulteration, and felt that all such discussion was a mistake. This summer I tasted of sugar-syrup honey, and, to my surprise, it was *not* sugar syrup. It seemed not only honey, but first-class honey. I have been engaged in testing honey for years, and think I am somewhat keen in that direction. This syrup was from pure granulated sugar; was stored at night very rapidly, and extracted the next day. The bees were not gathering at all, so there was no admixture—could be no admixture of honey from flowers. Some of this honey was capped over in a few days, and was still most delicious honey, or so it seemed to my experienced taste. I got a large number to taste of this, and all pronounced it A No. 1 honey. Some experts, whom I told what it was, said, "Why! I am surprised; that is as nice *honey* as I ever ate." Do you wonder, Mr. Editor, that I was led to wonder if here were not a solution to the impediment of years with no honey? I said not a word, but awaited the decision of the chemists, three of the best in the country; and when I found they placed this in company with some of the best floral honey—basswood, clover, etc., that I ever tasted of, and which was of undoubted character, I thought I saw still more hope in this direction. I then commenced studying the objections. If its character is such that I can not distinguish it from first-class honey from flowers; if the chemists can not do so, where is the objection to its production? I decided at once that it would be, in the public view, as Mr. Bingham says: "There is a mystery in the honey from the flowers that pleases people, and this sentiment is too valuable to lose." I asked myself and family; and we all said that, if it is as wholesome, looks as nice, and tastes as well, we make no objection. I then asked the honey-lovers immediately about me, if, with these conditions true, they would object. Every one said no. Thus it seemed to me that I had a case, and so wrote the articles for the *Review*.

But, Mr. Editor, may be I was hasty, and that the article was unwise. Prof. Wiley writes me that he thinks he can distinguish between sugar syrup transformed and stored by the bees, and floral

honey. Dr. Miller writes me that he thinks that his bees have stored syrup with so little change that it was still syrup, and would be so pronounced. If these statements are true, then I have certainly spoken too soon and unwisely. I can only plead a perhaps too great eagerness to remove a serious obstacle to successful bee-keeping.

Again, if this course would hurt the honey-market, or be looked upon as adulteration, then surely I shall wish I had never written a word I believe the many are usually right; and if the general opinion is against mine, when it is as conversant with all the facts, then I at once conclude that I may be the one at fault.

Several have written me that they would try it on a large scale next season. I shall at once urge all not to do so—at least, to do no more than to try one or two colonies to test the matter—first, as to profit; second, as to character of product; third, as to chemical characteristics; and fourth, that we may learn how the public will regard such actions.

I need not say that I have no other motive than the good of the bee-keeper. I think that for the present, at least, it may be for their good to let the entire matter rest.

Let me say that I have never thought for a moment that we should practice any deception. We should say frankly, "This is *sugar-syrup honey*," and so no one would buy it under a misapprehension. We can never afford in any case to be untrue, or to deceive in the least. A. J. COOK.

Ag'l College, Mich., Jan. 10.

This is handsomely done, and certainly we could not require more; for no one would ask either Prof. Cook or Mr. Hutchinson to reverse their honest convictions. That bees may change syrup to invert sugar, while in their organisms, is probably true; but as to whether this would make it *honey*, in the true sense, or a legitimate article of sale, is not a proposition that the great majority care to entertain for a moment. Granted that sugar syrup fed to bees, and stored in combs, has a honey taste (and some very good judges think it does have), the general sale of that article would demoralize and break down the price of all floral honeys. It is the fear of this, more than all things else combined, that has sent up such a mighty protest, for we only voice the sentiments in hundreds of letters.

SPECIAL NOTICES.

Our older readers will remember that I usually get talkative toward the month of February, especially when I am feeling real well. Well, it is not February yet, but—"coming events cast their shadows before." A. I. R.

STILL LATER ON PORK—FARMING DON'T PAY(?)

I am told they are to-day, Jan. 12, paying 10c for pork in Cleveland. We sold ours for 8½. Now, it would be something like having the cow in the parlor, to raise pigs in the greenhouse; but just now there is money in it. Who can tell us how? A. I. R.

AUGITE STOVE-MATS.

These give such satisfaction, and the demand is such, that we require five gross of them every two weeks to supply our orders. Several agents are at work and selling them very fast. Our prices are: 20c each; $2.00 per doz. Postage, 6c each. We furnish 6 doz. for $11.00, or a gross for $20.00.

SPECIAL PRICES ON SECTIONS.

After this month we will withdraw the special prices we have made on several widths of sections, so that if there are any of you who are planning to take advantage of these prices you must get your orders in without delay while they last. After Feb. 1st, prices of all widths will be same as the regular sizes, as quoted in our catalogue.

OUR BEAUTIFUL WINTER.

Since the 15th of December we have had winter every day for sure. It has snowed almost every day, and blown almost every day, and "friz" almost every day; and the sunshine has waded through the clouds a little almost every day too. The wheel finally got swamped, and that new pneumatic storage-battery greenhouse is now blanketed with snow so that you would not know there is a greenhouse there. The hot-water pipes did their duty all right until the night of the 10th. A strong northwest wind, with a temperature about 6° below zero, finally cooled off the pipes just over the door, so as to stop the circulation for two or three hours. A lighted lamp, however, set it going again, and now we keep that door protected with a horse-blanket. A. I. R.

GRAHAM GEMS "THE TASTE OF IT WAS LIKE WAFERS MADE WITH HONEY."—EX. 16:31.

The gems I have mentioned are simply the best quality of graham flour (Schumacher's, of Akron, we find is very nice), water, and a little salt—that is all. Have your cast-iron gem-pan very hot, and have the oven very hot. If they are hot enough you will not need any baking-powder at all; and if you want them light, you must eat them as soon as they come from the oven. After they are cold, they are likely to flatten down; but I like them just as well after they are flattened down, although most people do not. I recommend these to our bachelor friends away off on the California ranches. You can make them quickly, and it does not take a great assortment of materials; and with new milk and honey they give more health and strength than any thing else I know of in the whole wide world.

But I have said unto you, Ye shall inherit the land, and I will give it unto you to possess it: a land that floweth with milk and honey.—LEV. 20:24.

OUR NEW SEED CATALOGUE.

It is just out, this 12th of January. I wanted the boss printer to get it condensed on two of the pages of this issue; but he says we are behindhand, and the space is crowded besides. Never mind. Just drop us a postal card, and see how quick we will place the catalogue in your hands. Notwithstanding the disasters of last season in raising seeds, a great many staples are cheaper than they ever were before—that is, if you buy right away before the stock is exhausted. For instance, I got ten bushels of American Wonder peas, extra nice seed too, grown by a bee-man up in Michigan (where "buggy" peas are unknown), that we offer at only $4.00 a bushel; whereas some of the seedsmen's wholesale catalogues put them at $5.00. If you want any of that ten bushels, you will have to buy them before they are gone and the price goes up, which is true of a great many other things. Let us send you a seed catalogue, and then you will see. A. I. R.

MAPLE-SUGAR SUPPLIES.

The time is at hand when those who produce the delicious sweets from the sugar maple must be getting ready. For the best results you must have good clean apparatus of the most approved type, and you really can not afford not to read Prof. Cook's book, "Maple Sugar and the Sugar-bush," which we furnish at 35c, or we will give a copy free to all those who buy sugar-makers' supplies of us to the amount of $10.00 or more. We do not sell evaporators, but I think we can do you some good on spouts, pails, covers, and cans. We have ordered a carload of these for delivery Feb. 1st, and they are made of American tin-plate. The plates are tinned and made up into cans by the same firm; and by taking a carload we get them at bottom prices. See table below. The pails and cans are machine-made, far superior to hand-made, and guaranteed not to leak.

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Record sap-spouts, per 100....$1 00; 1000 for $8 00
1-gal. sq. cans, " .. 11 00
1 " " " 6 in a box, per box.$ 90; 10 boxes.$ 8 50
1 " " "10 " " " .. 1 50; " " .. 14 00
5 " " " not boxed, each... 30; 100.. ... 26 00
5 " " " 2 in a box, per box. 75; 10 for.... 7 00
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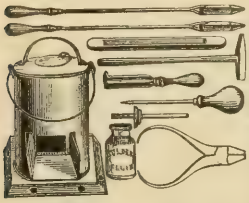

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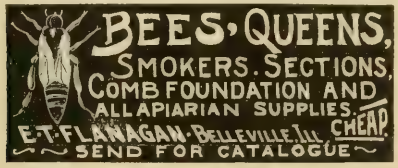

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A. I. ROOT, Medina, O.

THE REVIEW FOR 1893.

Special Topics

If there is any one thing more than another that has made the REVIEW what it is, it is its discussion of "Special Topics;" the gathering together in one number of the best that is known, of the latest views of the best men upon some special topic. Like a lens, the REVIEW brings together the lines of thought, and so illumines the subject that it can be clearly seen and understood. While many of the most important subjects have been thus discussed, new ones are continually coming up, and some new discovery often puts an old idea in a new light, hence the REVIEW will always find a fruitful field in the discussions of special topics.

One Journal.

In the main, the contents of our bee-journals are made up of original matter. From the very nature of the case, the value of this matter greatly varies. Many bee-keepers can not afford to take more than one journal, neither have they the time to read all of the journals, and to be able to find all of the most valuable matter of all the journals brought together, condensed, reviewed and criticised, is a blessing to the busy man, and to the one who "can afford only one journal." To thus furnish the cream of the other journals is the province of the REVIEW.

The West.

The West is a great and growing country, and its bee-keeping industry is keeping pace with its other magnificent industries; but its bee-keeping is different from that of the East, and it is with a view to making the REVIEW of more interest to the bee-keepers of this section that the services of Jno. H. Martin (better known as Rambler) have been engaged to write a series of articles upon "The Bee-keeping of the West, its Needs and Necessities." He will not only describe Western bee-keeping, but will endeavor to point out its mistakes, and make his articles peculiarly helpful to Western bee-keepers.

Specialist Articles.

R. L. Taylor, of Lapeer, Mich., is a specialist of large experience, who seems to have the ability to secure large crops of honey with very little labor—this, too, in the face of the fact that he has had foul brood to contend with. His decisions upon apicultural matters have been almost phenomenally correct. During the leisure of this winter he will prepare a series of articles for the REVIEW, giving its readers the benefit of his experience, each article being written with a view to giving advice that will be applicable to the months in which it is to be printed.

Hasty's Review.

E. E. Hasty needs no introduction. No other apicultural writer approaches him in bright, quaint, original expressions. Coupled with this is a thorough knowledge of practical bee culture, and he is to use these two accomplishments the coming year in helping to make the "Extracted Department" of the REVIEW. He is to read all of the journals, and then criticise their contents in that inimitable way of his. The REVIEW is also to come in for its share of criticism. Probably no feature of the REVIEW for 1893 will be more interesting or profitable than "Hasty's Review."

At the Front.

The REVIEW strives most earnestly to stand in the front rank; to publish advanced ideas before they have become a matter of history; to be interesting, enterprising, wide awake, up with the times, and brimful of ideas that are especially helpful to the honey-producer.

For Ten Cents.

The REVIEW is $1.00 a year; but if any one wishes, before subscribing, to see with his own eyes what kind of a journal it is, let him send 10 cents in stamps, and three late but different issues will be sent, and with them will be sent a sheet showing the portraits of nearly a dozen of its contributors (among them that of the editor), together with a list of the special topics that have been discussed, the numbers in which they may be found, and the prices at which they may be obtained; a proposition will also be made whereby these back numbers may be secured at *half-price*.

Address W. Z. HUTCHINSON,
Flint, Mich.

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CONVENTION NOTICES.

The ninth annual meeting of the Wisconsin State Bee-keepers' Association will be held in the Capitol, at Madison, Wis., on Wednesday and Thursday, Feb. 8 and 9, 1893.

H. LATHROP, Rec., Sec., Browntown, Wis.

CIRCULARS RECEIVED.

The following parties have sent us catalogues of hives, apiarian supplies in general, bees, queens, etc. Free copies will be sent to applicants.

Miller Bros., Bluffton, Mo.
N. A. Knapp, Rochester, O.
E. T. Flanagan, Belleville, Ill.
W. A. Chrysler, Chatham, Ont.
John Nebel & Son, High Hill, Mo.
G. B Lewis Co., Watertown, Wis.

SEND YOUR NAME and receive my price list of Queens, Nuclei, and Colonies. Address S. D. McLean, Columbia, Tenn.

DEAR BEE-KEEPING FRIENDS:

I shall be glad to book your orders, for what queens you may wish, for early spring or summer delivery. Prices for untested, February, March, April, and May, $1.00 each; six, $5.00, or $9.00 per dozen; June and after, 75c each; $4.25 for 6; or $8.00 per dozen; 100 tested three-banded queens, $1.50 each, for early shipment. Prices for breeding-queens on application.

Remember, I breed both the three and five banded Italians at above prices. My queens give satisfaction, judging from the many testimonials, from nearly three thousand sold in 1892. Safe arrival and satisfaction guaranteed. Also Hives and Supplies low.

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Greenville, Hunt Co., Texas.

A large number of fine queens on hand; yellow and prolific; ready April 15th; warranted queens, $1; 6 for $4.50; select tested, yellow to the tips, suitable for breeders, each, $2. Reference, A. I. Root.
W. H. LAWS, Lavaca, Seb. Co., Ark.

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P. L. Viallon Mfg. Co., Bayou Goula, La.

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Of 2¼ acres, 3-room house with good cellar, inexhaustible well of water, cistern, stable, hen-house, corn-crib, etc. Fruits: Apples, pears, apricots, plums, cherries, grapes, gooseberries, and currants. One-half mile from college, Fairfield, Nebr., in a section famous for its fertility, healthfulness, and abundant crops of honey, with 70 colonies of bees (mostly pure Italian) in frame hives, with necessary fixtures and abundant stores. Price $900.00; partly on time if desired. Write quick; must sell. This will not appear again. Address
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2tfdb 25th & Clay Sts., St. Joseph, Mo.
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Send 10-ct. stamp for "Practical Hints to Bee-keepers."
Please mention this paper.

HONEY COLUMN.

CITY MARKETS.

BOSTON.—*Honey.*—Honey is selling very slow, owing to continued cold weather. We quote: Best one-pound combs selling at 16@17; extracted, 8@10. *Beeswax.* None on hand.
BLAKE & RIPLEY,
Jan. 19. Boston, Mass.

KANSAS CITY.—*Honey.*—There is no change in the honey-market; stocks are fairly large with a good demand. White 1-lb., 16@17; No. 2, 15; dark, No. 1, 13@14; No. 2, 12; extracted, 7@8. *Beeswax*, none on hand.
HAMBLIN & BEARSS,
Jan. 20. 514 Walnut St., Kansas City, Mo.

CLEVELAND.—*Honey.*—Honey offered by N. Y. parties, No. 1, F. O. B. Cleveland, O., 14; No. 2, 10. Demand not as good as before holidays. Sales slow. *Beeswax*, 30.
WILLIAMS BROS.,
Jan. 18. 80 & 82 Broadway, Cleveland, O.

CINCINNATI.—*Honey.*—There is no change in the market since our last. Extracted is in fair demand at 6@8, with a limited supply. There is a fair demand for comb honey at 14@16 for best white, with no choice honey on the market. *Beeswax.*—Demand good, at 23@25 for good to choice yellow, with a fair supply.
CHAS. F. MUTH & SON,
Jan. 21. Cincinnati, O.

KANSAS CITY.—*Honey.*—The demand for extracted is larger than the supply, and finds ready sale at 8c for white; 6@7 for amber. Comb, 1-lb., 17c for white; 12@14 for amber. *Beeswax*. 23@25.
CLEMONS-MASON COM. CO.,
Jan. 20. Kansas City, Mo.

ALBANY.—*Honey.*—We have received a couple of consignments of comb honey since our last report, and it is selling off nicely. From present indications we shall be out of stock in a very short time. No material change in prices. Extracted moving off freely, and light is very scarce. We quote: Light, 9@10; dark, 7@8.
CHAS. MCCULLOCH & CO.,
Jan. 21. 393-397 Broadway, Albany, N. Y.

DETROIT.—*Honey.*—Best white comb honey, 14@15; sales slow, supply not large. Extracted, 8@8½. *Beeswax*, 26@27.
M. H. HUNT,
Jan. 18. Bell Branch, Mich.

BUFFALO.—*Honey.*—Trade is very quiet, excepting on small lots of fancy clover selling mostly at 17@18; No. 1, 15@16; poorer grades, liberal supplies, ranging from 10@12; buckwheat mostly 10. *Beeswax*, 25@30.
BATTERSON & CO.,
Jan. 18. 167, 169 Scott St., Buffalo, N. Y.

ST. LOUIS.—*Honey.*—Comb slow; white-clover, 17@18; dark, 7@10. Extracted, very scarce and in demand, at 6½@6¾ in barrels; 7¼@7¾ in cans. *Beeswax*, prime, 25½.
Jan. 19. D. G. TUTT GRO. CO.,
St. Louis, Mo.

MINNEAPOLIS.—*Honey.*—There is a fair supply of honey on the market; but it runs to dark honey. There is very little fancy white-clover on the market. Fine white-clover, 17@18; 2-lb. combs, 16@17; buckwheat, 13@14; extracted, 7@8.
Jan. 20. J. A. SHEA & CO.,
14 & 16 Hennepin Ave., Minneapolis, Minn.

CHICAGO.—*Honey.*—The demand for honey is fair considering the extreme cold weather. Fancy white brings 17@18; other grades of white, 16; dark, 13; extracted, steady at 6@9. The offerings are moderate in volume, but will likely increase when the weather moderates. *Beeswax*, 25.
R. A. BURNETT & CO.,
Jan. 18. 161 So. Water St., Chicago, Ill

ALBANY.—*Honey.*—Our honey market is slow on account of cold weather; but our stock was never so light as now. We have less than 50 cases on hand, and only 1 bbl. extracted, when usually we have 1000 cases in stock. For honey not granulated in comb, we quote: Small, white comb, 15@18; mixed, 13@14; dark, 10@11. Large comb and double glass sell for 1@2c less. Extracted, white, 8¼@9; amber, 7¼@8; buckwheat, 7@7¼.
H. R. WRIGHT,
Jan. 13. 326, 328, 330 Broadway, Albany, N. Y.

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Nucleus colonies. Circular free.
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WANTED.—A first-class blacksmith to work on commission; tools, shop, and material furnished; must be temperate and honest. Write. 2d
F. P. HISH, Tower Hill, Shelby Co., Ill.

WANTED.—A good young man to do general farm-work. I will pay $300 per year. Reference, the Larimer Co. Bank of Loveland, Colo.
J. B. SWAN, Loveland, Larimer Co., Colo.

WANTED.—To exchange for any thing useful to a bee-keeper, one honey-extractor, good as new; 100 T crates in the flat; 40 queen-excluding honey-boards; 10 second-hand bee-hives, all-wood brood-frames, L. Simplicity size; 800 metal separators; 2 mandrels of different size; one 10-in. rip, one 10-in. cut-off saw; one 6-in. rip, one 6-in. cut-off; one 6-in. dovetailing saw. Address 514 ST. GEORGE'S ST.,
2-5db Ottawa, LaSalle Co., Ill.

WANTED.—To rent an apiary, or a position as an apiarist in California. Correspond with
CHAS. BROWN, Nicolaus, Sutter Co., Cal.

WANTED.—To exchange Snyder blackberry and Gregg raspberry plants, for Barnes saw, 6-in. fdn. mill, or wax; saw wanted at once.
L. B. BELL, Brecksville, Ohio.

WANTED.—Position in an apiary by a young man. Five years' experience; good recommendations.
LLOYD SECHRIST,
3-4-5d Pleasant Home, Wayne Co., Ohio.

WANTED.—A situation by a practical apiarist in an apiary or Hive manufactory; 12 years' experience. Address G. C. R., Box 707,
Custin, Minn.

WANTED.—To exchange one pen S. S. Hamburg chickens, for breech-loading shot-gun, incubator, or honey-extractor.
J. C. PROVINS, Masontown, Pa.

WANTED. To exchange photographic outfit, worth $40, for bee-hives, etc. Will value outfit at $30.
D. B. THOMAS, Odin, Mo.

HUTCHINSON wanted this whole page for his ad. this month, but as part of it was promised to other advertisers, we had to put his ad. on page 75.

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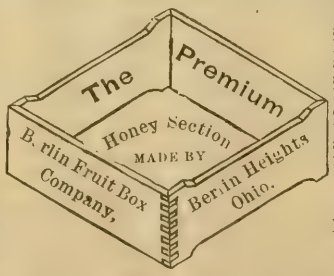

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PROF. COOK says: "No bee-keeper can afford to be without them."
CHAS. DADANT & SON say: "We intend to use them in all of our apiaries hereafter."
JAS. A. GREEN says: "Your escape is undoubtedly the best one made."
GILBERT BROS., East Avon, N. Y., write: "We would not be without them for $5.00 each."

Prices: Each, by mail, postpaid, with directions, 20c; per doz., $2.25. Send for descriptive circular.
R. & E. C. PORTER, Lewistown, Ill.

GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.

ILLUSTRATED SEMI-MONTHLY

PUBLISHED BY A. I. ROOT. MEDINA OHIO

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STRAY STRAWS

FROM DR. C. C. MILLER.

WHEW! what a winter!

WHAT'S THE BEST DATE for the next N. A. B. K. A. convention?

FALCONER has gotten up a calendar in beautiful style, with a wreath of wild roses in colors around it.

A PRINTER'S LIFE was saved by the distance of Medina from Marengo, when I read on page 47 that it takes 26 full days for a queen to mature. It should have been 16.

BEES ARE INSURED against fire or lightning while in cellar or within 200 ft. of dwelling, in the Phœnix, of Brooklyn, N. Y., says A. C. Waldron.

PROF. WILEY'S ADDRESS, on page 57, with its right and left handed polarization, invert sugar, levulose, etc., mixed me all up so that I wished there had never been any adulteration.

HENS EAT BEES, says *C. B. J.*, and should not be allowed near an apiary. I have never seen hens eat workers, but negative proof is not very satisfactory. Have others found them guilty?

WHEN WAS HEDDON converted to the belief that adulteration is a benefit? Not long ago he was one of the strongest advocates for some kind of a stamp to protect us from adulteration.

I DON'T KNOW any thing for sure very often, and when I do happen to think I know something, Doolittle kicks it all over. Doolittle, I don't want you ever to speak to me again—till next October.

"DO SOUTHERN QUEENS stand the winter as well as queens reared in the North?" is asked. I think it is generally agreed that there is no difference, but it seems there ought to be at least a little difference.

THE EDITOR of *B. B. J.* is having a very sweet time. Packages of honey for the World's Fair are sent in to him, and he says, "Honey for Chicago has carried all before it, and it is honey all over the place as we write."

THE *Progressive Bee-keeper* was burned out, and suspended. Nothing strange about its suspending — lots of new bee-journals suspend. The strange part of the story is that it has come to life again, bright and smiling as ever.

THE SCOTTISH Bee-keepers' Association had on exhibition a collection of articles showing the utility of honey and wax, including confectionery, foods, beverages, ointments, plasters, toilet preparations, furniture creams, and medicines. Better bring 'em to Chicago, Sandy.

CANADIANS have been enjoying a little discussion as to the effect of a duty on the price of honey. I don't know much about such things, but it seems to me it would look a little more neighborly if there were no duty on either side.

AN ARRANGEMENT to prevent swarming is reported in the *American Farmer* as patented by H. P. Langdon. The intimation is given that it prevents the desire to swarm, and that's what so many are looking for. "The proof of the pudding," etc.

TWO DIFFERENT MEN have lately written of my living in Nebraska, and of my hive and honey-board. That's all right, except that I never got up a hive or honey-board, and never lived farther west than Marengo, Ill. It must be some other Dutchman.

FOUL BROOD in wax requires at least 194° F. for at least three hours, Prof. Mackenzie thinks, and that "the simple process of mixing the infected material with the melted wax is not sufficient to prevent germination." He seems to have little fear of foul brood in foundation.

BRITISH BEE-KEEPERS, some of them, are severely condemned by their brethren for advertising extracted honey as low as 14 to 16 cents per pound, one man saying he fed honey to his bees rather than to sell it for less than 25 cents per pound. I wonder how it would feel to get 25 cents, even for comb honey.

PROF. MACKENZIE, the Canadian bacteriologist, does not believe that chilled brood will produce foul brood, after making an experiment that he thinks "conclusively shows that there is a distinct difference between foul brood and ordinary putrefaction." That a bacillus has been found in an egg, he thinks requires confirmation.

THE EDITOR says (p. 66) that I have been president of the North American two or three terms. I know of but once. Did I make it so dull that the one term seemed long enough for two or three, or did Ernest write that with a pair of spectacles that made him see double, or was it A. I. with too much of that beer-plant inside of him?

A BRIGHT IDEA comes from W. L. Coggshall. You know a smoker sometimes slips out of your hand and falls, especially when your hand is tired. Well, take a piece of section, cut into strips ¼ inch wide or more, and with small tacks fasten them on the outer edge of each side of the bellows, and "see how much easier you can work it and not drop it."

VERY UNKIND is the *British Bee Journal* to class Rev. W. F. Clarke's discovery as a second "scientific pleasantry." It says, "The trowel theory was started a few years ago by the Rev. W. F. Clarke, in Canada, as a pleasantry, no

doubt, seeing that the structure of the sting makes it quite unsuitable for such a purpose." Bro. Clarke better instruct those British editors.

Some think that an occasional fire in the cellar is as good as or better than one kept continually burning. While I doubt that (providing the fire is needed at all), it is possible that the continuous fire is not worth enough more to pay for the extra trouble. If an occasional fire is used, I believe I would as soon have it in the milder spells, rather than the severer spells of weather.

What is honey? I'd like an answer to that, which would do to go into a dictionary. I find: A sweet juice collected by bees from the flowers of plants, and deposited in cells of the comb in hives.—*Webster*. The nectar of flowers when collected by bees and deposited in honey-combs in the hive.—*Secor*. The saccharine exudation of flowers, gathered and stored by the bees.—*Wiley*. Digested nectar.—*Cook*. Is either of these right, or what is right?

LANGSTROTH'S REMINISCENCES.

HOW HE BECAME INTERESTED IN BEES.

The end of my Andover ministry was just what might have been expected. My health broke down entirely, and, after the exhausting demands made by a revival of religion, I lost my voice for a time, and came near losing my life. It now became evident that I must resign my pastorate. After this step I accepted an invitation to become principal of the Abbott Female Academy, in Andover. At the request of my people the connection between us was not formally dissolved until nearly a year after my resignation. I supplied the pulpit by exchanging with the neighboring pastors, and by giving place occasionally to candidates whom the people wished to hear. Little pastoral work was done by me, and yet my salary was paid in full unto the day I moved away. I shall never cease to remember with gratitude the Andover people for their considerate and loving treatment of their young minister.

At the time of my marriage, my mother and one sister became entirely dependent on me, and made their home with us as boarders in the family of one of our deacons. When I began housekeeping, in the spring of 1837, the inflation of prices in the time of President VanBuren had culminated. I paid $15.00 for my first barrel of flour; and although my salary was considered a good one, and was paid promptly every quarter, it soon became quite apparent that my expenses would exceed my income. My dear wife, instead of even intimating that it was hard for us to begin the world with expenses much greater than would suffice for a considerable family, always encouraged me in doing my duty for the relief of the dear ones whom God had made dependent on us, saying that we might thus safely trust events to our heavenly Father.

There came, one day, a gentleman from Boston, with a letter from my old friend Prof. Olmstead, of Yale College. This man's son had fallen behind his classes, and needed private instruction, and his father wished to place him under my care. He seemed unwilling to take any denial, and offered me for my services a very liberal sum, saying that he would pay more if that was not enough. This providence of God supplied our wants.

Having accepted an invitation to become the principal of the Greenfield, Mass., High School for Young Ladies, I left Andover in the spring of 1840. While acting as principal of that school I supplied for nearly two years the pulpit of the Second Congregational Church, and then became its pastor. With an increasing family I again began to find my income too small, when a gentleman visited me, bringing a letter from his sister, who was well acquainted with my wife. Having a daughter quite hard of hearing, he wished to have her education completed in our family; and for a considerable time we received from this source such ample remuneration as our necessities required.

My first child, a son, was born July 12th, 1837. My second, a daughter, was born July 16th, 1840. When about a year and a half old she became afflicted with a spinal complaint, and we feared that she would grow up a deformed cripple. For many months she lay in her little crib, on my side of the bed, that I might lift her and change her position, as she would pitifully moan out during the night, "It hurts! oh it hurts!" My wife says I often fell asleep while trying to amuse her with childish stories. As is frequently the case in spinal complaint, her mind developed abnormally fast; and in looking over remarks which she made, and which my wife set down at the time, it hardly seems possible that such things could have been said by a child of her years. One day she asked her mother whether God would let her hem his pocket handkerchiefs when she got to heaven; and when told that God did not need any pocket handkerchiefs she replied, "Oh! yes, mother, he does; for I heard you read the other day from the Bible that he would wipe away all tears from their eyes." It was many years before she recovered so as to lay aside the appliances which she was obliged to wear by night as well as by day.

The apostle says, "We have not a high-priest that can not be touched with the feeling of our infirmities." Jesus was human as well as divine; and we feel sure that, under all circumstances, he is able to sympathize with our suffering humanity.

More than fifty years have passed away since we grieved over our suffering child, and yet I can never see a mother with a child afflicted with spinal disease but that my heart goes out to her in deep sympathy, and I want to know all about her troubles, even if I can suggest nothing that will help her. When, later in life, I was confined to a bed of suffering by a railroad accident, the words, "He was wounded for our transgressions, he was bruised for our iniquities," seemed to touch my heart more than they had ever done before; and my sympathy for the poor wounded soldiers was greatly increased.

I have already said, that, notwithstanding my early passion for studying insect-life, I can not remember, with a single trifling exception, that I took any special interest in such matters during my college life. In the summer of 1838 the sight of a large glass globe, on the parlor-table of a friend, filled with beautiful honey in the comb, led me to visit his bees, kept in an attic chamber; and in a moment the enthusiasm of my boyish days seemed, like a pent-up fire, to burst out into full flame. Before I went home I bought two stocks of bees in common box hives, and thus my apiarian career began. With the exception of a small book, the author of which seemed to doubt the existence of such a thing as a queen-bee, and my schoolboy's Virgil Delphini, I knew absolutely nothing of the vast literature of bee-keeping, and of course my progress was very slow. In the end I was undoubtedly a great gainer by this ignorance of books, as what came under my own observation was so carefully studied as to become much more my own. Almost the very first thing that I bought, when I removed from Andover to Greenfield, was a stock of bees in a hollow log. Increasing gradually the number of my colo-

nies, I learned, by diligent inquiries of the best bee-keepers in my vicinity, all that they could teach. But this was not much, as none of them knew enough to drive bees out of their hives, nor used smoke to facilitate their operations, so that I was indeed groping almost in the dark. About this time I was fortunate enough to get two valuable works—the "Letters" of the immortal Huber, and the second edition of Bevan's Treatise on the Honey-bee, London, 1838. These works made known to me the facts accumulated for thousands of years by the great masters who had so profoundly studied the habits of bees. I soon became the happy owner of an improved Huber hive, and several bar-hives, all made according to Bevan's directions. Ignorant of the futile attempts of Morlot and other German and French bee-keepers to make a practical hive for the common bee-keeper, out of the Huber hive, I experimented on that line with no better results until at last I was content to use the Huber hive merely for purposes of observation. The only improvement which thus far I was able to make upon the hives of others was in giving them greater protection against the extremes of heat and cold, and the sudden changes of temperature so eminently characteristic of our climate.

During my pastorate in Greenfield I suffered much from frequent attacks of my old head trouble, which at last compelled me to resign my charge. Removing to Philadelphia, I established there, in the fall of 1848, a school for the education of young ladies. Having a second-story piazza, and a number of spare attic rooms, I built up quite a city apiary, and began to experiment upon a much larger scale. In the Bevan hive, which I mainly used, the combs were attached to bars or slats which rested upon rabbets just deep enough to receive them. The cover fitting closely upon the top surface of these bars, was, of course, very firmly propolized to them. To remove it and get at the bars, Key's metallic plates were used; but even with them it was often difficult to perform the manipulation needed. As the cover rested on the bars, the bees could get into the supers placed upon it, only by passing between crowded ranges of combs; and the opening admitting them into these supers had to be made with special reference to this fact. My chief improvement upon this hive was to deepen the grooves upon which the bars rested, so as to allow about three-eighths of an inch between the cover and the bars. This not only facilitated very much the removing and replacing of the cover on which the surplus honey-receptacles rested, but gave a shallow chamber from which the heat and odor of the hive could ascend freely into the supers, besides admitting the bees to them in the easiest possible manner. This improved hive had also a bottom-board of my own invention, which could be opened or shut, even in the most crowded stocks, without crushing a single bee, and which, as the hive stood upon legs, permitted the attachments of the combs to the front and rear walls of the hives to be severed from below as well as from above. Some of these hives were about 18 inches long by 18 inches wide and 6 deep, thus giving an unusual storage room for surplus-honey receptacles placed above the main hive. There was then very little demand for honey in the best markets in this country, except in the comb, and no hive which did not furnish its surplus in this form could hope to gain any favorable recognition. From these flat hives I obtained the beautiful specimens of honey in glass tumblers and globes, etc., for which, in 1851, I obtained the first premium from the Philadelphia Horticultural Society.

Continued.

MANUM IN THE APIARY.

MANUM'S WAY OF STOPPING ROBBING; SEALED COVERS VS. ABSORBENTS; SMALL FRUITS, ETC.

"Now, Mr. Alexander, if Mrs. M. will excuse us from any further dinner-table talk we will walk over to the farm where my home apiary is now located. My wife has learned that, during the bee-season, I am very unceremonious, and at times she makes big eyes at me. But the truth is, Mr. A., since I have got to running my bees alone I have formed the habit of eating very hurriedly—so much so that I often deprive myself of a full dinner when it so happens that I can take dinner at home. More often, however, I have to take up with cold lunch at an out-apiary, and it is mere chance that you found me at home to-day. Here we are at the farm, only about ten minutes' walk from the house."

"What are you going to do with those stones in that great pile?"

"I intend to use them in building a cellar-wall for my new house which I propose to build next summer, if—if—the bees do well for me. There, the house will stand right here on this elevation."

"Why! what a beautiful location for a home, with such a fine view of Lake Champlain Valley, with the Adirondack Mountains in the background, and with this grand old green mountain in the rear! But, Manum, I should almost be afraid this great mountain would roll over on me. My! how I should like to climb to the top of it! How long would it take me?"

"Well, Mr. A., that would depend upon your taking the right path. I have walked to the top in one hour. There, here we are among the bees; and there seems to be trouble up there at No. 28—robbing, as sure as you live, and a bad case of robbing too. My! see the dead bees in front of the hive."

"Sure enough! and what can you do to stop it?"

"Well, as this is a bad case I must be thorough with them. Here is a pepper-box sprinkler filled with peppermint water. You may hold it for me while I remove the cover (honey-board) to let out all the robbers I can. There, now, I will give the bees, combs and all, a good sprinkling. This changes the scent of the hive, and seems to give the home bees new courage to defend themselves; and, besides, it causes the robbers to hesitate somewhat at the entrance. Now I will stuff the portico full of this green grass and weeds. Let's put in a lot of it, so the robbers will have to crawl some distance to get to the entrance. Their progress, you see, will be so slow that the home bees will have fewer robbers at a time to contend with, and, furthermore, the robbers will soon tire of crawling through the grass. And now I guess that, in order to make a sure job of it, I will get my garden sprinkler and give this pile of grass a thorough wetting. There, do you see the robbers are getting discouraged already?"

"How long will you leave that grass over the entrance?"

"That doesn't matter very much—three or four days, and perhaps a week. This stuffing the entrance with grass is nothing new; but the difficulty with most bee-keepers is that they do not use grass, straw, nor hay enough. They will just throw up a few spears of hay or grass, and then take it away at night or the next morning. I have often left it as a barrier a whole week. Of course, after a time it settles enough so the home bees can pass out and in at the ends, or at top of the grass; but the material being still there, the robbers seem to think

there is no chance for them to enter; at least, I usually succeed in stopping severe cases of robbing in this way."

"Manum, do you use the Hill device over the frames in preparing your bees for winter?"

"No, Mr. Alexander, I do not. I did years ago use something similar; but of late years I just lay the quilts right on the top-bars. There is no harm, however, in the use of the Hill device; but it is something of a bother for me to use them; and, thinking them of but little benefit with my small frames, I have discarded them. I received a letter only yesterday from a party who inquires about these top passages; also regarding the spacing of combs for winter. My answer to the last question was, to space the combs 1⅝ to 1¾ from center to center. This seems to admit of a greater number of bees between the combs, and I imagine they winter better when the combs are so spaced. However, we all have our whims and notions about many things in the apiary, some of which, I dare say, are mere whims, and of no real benefit to the bees."

"Manum, what do you think of sealed covers? Do you think it advisable to allow the covers to remain as the bees fix them for winter, sealed tight?"

"Having had but little experience in wintering indoors, I can not answer for those who winter their bees in that way; but for outdoor wintering I prefer to remove the covers, and, in their place, spread over the frames some kind of quilts; and over these, six or eight inches of some kind of absorbent. I use dry planer shavings. The theory advanced by those who advocate sealed covers is, that the bees, governed by instinct, seal their hive air-tight except the entrance. True enough; but it is far more than the *one object* of retaining the warmth which they generate; and while it may prevent the escape of a small amount of heat, it also prevents the escape of foul, damp air, which, in my judgment, is more injurious to the bees than the loss of the *little* warmth which may escape through a well-prepared cushion, through which the foul air will escape to give place to pure air entering in through a very small entrance. The case may be very different, however, with indoor wintering, because it is possible that, in a warm cellar, the bees will set the air in motion in such a way as to cause the foul air to pass out of the entrance, and pure air to enter in, providing the air in the cellar is kept pure by proper ventilation. In this way the bees may be able to overcome the difficulty; or, in other words, purify the air in the hive in a moderately warm cellar, while it would be impossible out of doors; therefore, while sealed covers may be advisable indoors, it may be bad practice out of doors. I have become convinced by experience, that sealed covers are detrimental to the welfare of the bees when wintered on summer stands.

"A few years ago I bought two colonies of black bees in old box hives, of a farmer. I was to have my choice of ten or twelve colonies. I got them in March; and upon examining them I found one hive that had an inch auger-hole in the top. This hole was open, and had been all winter. A few days before, there had fallen some six inches of snow (these bees were on their summer stands), and I found on each hive eight or ten inches of snow—new and old snow. The warmth from the bees in this one hive had melted the snow directly over the hole, and there was a funnel-shaped hole through the snow, so that the bees could be seen from the top, upon raising the hive from the bottom-board to examine the condition of the bees. I found this colony was the strongest of the lot, and I took it. Again, three years ago this fall, when I packed my bees in my home apiary I found I was short five cushions; hence five colonies were left unmolested, and remained all winter, with sealed honey-boards. They were well packed on the sides, and had a good cap (roof) over them; in fact, they were double hives, or a hive within a hive. In the spring, on the first examination of my bees I found these five colonies dead, and a dauby mess they were, while my loss among the others was only 2 per cent, and all were dry and healthy. The result might have been different, however, if wintered indoors."

"I notice, Manum, that you have pieces of tin tacked to your winter-entrance slides (entrance-reducers); what are they for?"

"They are to prevent mice from gnawing holes through the slides. I do dislike very much in the spring to find that mice have taken up their abode in the same apartment with the bees, as that always means mutilated combs.

"Now, Mr. Alexander, inasmuch as your principal business is raising fruit and propagating new varieties of fruits and seeds, I should like to ask *you* a few questions; and at the same time I should like to have you see my berry-fields. Let us go to the strawberry-bed first. There, you will see I have three-fourths of an acre in this bed. Here are two rows of Jessies. The next two are Haverlands, and the next one Jessies, and then I have here Bubachs, Cumberlands, Downings, Crescents, and Gandies. These varieties cover about half the bed, then the rest are all Wilsons; and as this is my first experience in the berry business except for home use, I want to ask you if I have set them out properly."

"Well, Manum, in the first place I want to say that you have a very fine bed, and you have kept it free from weeds; but I would have set only one row of Jessies to three or four rows of Haverlands, and then one row of Jessies and four more of Haverlands, and so on; and I would have followed the same rule with the other kinds—one row of perfect blossoms to three or four imperfect ones; and of all the berries you have, I think that, for your soil and trade, you will like the Wilsons better than any of the others."

"Would you advise covering my berries with straw?"

"Yes, a light covering will protect the vines from sudden changes of weather; but at the same time, if you are not careful about the amount of straw you put on them, the mice may do more damage than the weather would to the unprotected vines; therefore, as the danger from thawing and freezing is only in early spring, I would defer the covering until then; and in that way you will avoid any danger of harm by mice."

"Here we are in the blackberries and raspberries. Here I have 300 blackberry-bushes, Snyders and Taylors, and here are three rows (fifty in the row) of the Shaffer red raspberries; and the rest of the piece (1½ acres) are the Cuthberts."

"What have you got this wire strung along these rows of Shaffers for?"

"That is to keep them off the ground. They grew so very rank and sprawling that I feared the winds would whip them all away."

"You will find, when you come to tie all these to the wire, that the twine will cost you quite a sum of money. I should rather have kept them pinched back, and had them grow up more stocky. You will learn that after more experience."

"Yes, I suppose that would have been the proper way. I think you are quite right in recommending summer pruning; but, you see, I neglected to do so; hence I must now do the

next best thing; and so far as the cost of twine is concerned, I shall not pay out a cent, as I shall use corn-husks for strings by slitting the husks up into half-inch strips when wet. By twisting a little they are much nicer for that purpose than any twine I can find. I have used husks for tying up grapevines, and like them very much." A. E. MANUM.

Bristol, Vt., Jan., 1893.

[Mr. Manum's accidental experiment was rather disastrous to the sealed-cover idea. It didn't work that way for us. We are trying the matter on a more extensive scale this winter, and this spring we shall be able to come to a more definite conclusion of the actual value of the sealed covers, as the winter has been very cold so far.]

BALDENSPERGER'S LETTER.

THE PLACE WHERE ELIJAH CALLED DOWN FIRE: BEE-MOTHS OF THE EAST; MOVING BEES ON CAMELS' BACKS; DRONES, HOW FAR WILL THEY FLY? ETC.

On p. 647, Sept. 1, you ask in a footnote whether they are able to identify the spot where Elijah called down fire from heaven. I do not know. You are aware that almost every miracle and every great deed spoken of in the Bible was utilized, at a remote period, may be for piety, but more likely to extort money, to identify a spot in every locality which might serve to draw the attention of pilgrims to the Holy Land. Of course, every one lays down a small sum of money, an offering, and churches, chapels, mosques, and convents have sprung up at such points, still held partly by the Franciscan friars, partly by the Greek church, and many have fallen into the hands of the Mohammedans since the retreat of the Crusaders. At the spot you call our attention to, no art has been used. A rough altar of stones is built up, and pointed out as the very place on which Elijah called down the fire. It is called "Muhraka," "the burning place," and is still visited yearly by the natives, Christians, and Mohammedans, and probably this custom has been kept up ever since the great event. Four hundred and fifty prophets were beheaded on the banks of the river; the Israelites kept up their yearly visits; the Christians followed their example when they were masters there, and the prophet Elijah is held in great esteem by the Mohammedans also, by the name of "Chadder," the living, on account of his translation to heaven; so the custom was probably kept up, and is so to this day. Sheep and goats are taken there and offered in remembrance, or to fulfill vows made in illness, or for any kind of relief. The animals are killed, and eaten by all partakers of the feast. The big Carmelite convent which is located here gives one a very good idea of the buildings scattered about here and there in Palestine, mostly built with pilgrims' money. This is also a place where like festivals are held in remembrance of Elijah's being fed by ravens. The sanctuary of the convent is built over a cave, which is still pointed out as the identical cave of Elijah. The newly established apiary is about two miles back of the convent.

In warm climates, honey-bees eat a good deal more honey, when they can get it, than in the North. I think a colony needs fully 40 lbs. from the end of September to the end of February or middle of March. The warm days in winter are not scarce, and bees fly out in search of pollen and water, and take their stores in passing. Thus the mild winters are a nuisance, inasmuch as they cost us Southerners a good deal more honey than you Northern people. The most intelligent and progressive bee-keepers live in the North; but it is just this that made them start up there, while Southern bee-keepers depend a good deal on the let-'em-alone system. The few there are invent nothing, or next to nothing, leaving that honor to the busy Northern heads. We then buy your articles ready made, and use them gladly and profitably.

Mr. E. France, on page 649, talks about bee-moths. Although our Eastern bees keep the moths at a distance, yet old combs and want of bees greatly favor the breeding of the moths. If we do not take away, during the autumn, the surplus combs, the moths do away with them in the shortest time imaginable. We therefore take a hive with 13 combs at the bottom, and tier up in supers five or six stories high, and sulphur them once a week to begin with, and once a month later on. Camphor put in between the frames will also preserve them.

The "full-blooded" Cuban apiary, Sept. 1, p. 651, is just as much a genuine North-African apiary. Laying the hives down horizontally, and a few square hives, with one or two of cork oak, round, is just the thing you meet with in Algiers. The Spaniards probably got the idea here, and carried it to Cuba centuries ago. I think it would be very interesting, especially for Southern bee-keepers, to hear more about migratory bee-keeping, and the way of doing it at the least expense. Of course, in this country a different system will have to be used. In the old country I used camels to carry the bees where I wished. I wish I could have such animals here for carrying hives some little distance up the mountain-paths into the Alps; although I think with horror of the time of our greatest trials in getting the hives loose from the camels' backs, the cordage being very much in the way (see p. 627, 1890). But we used to pay only 20 to 50 cts., according to distance, sometimes a dollar, to carry eight hives.

I have never seen bees fly back to their place when removed 1½ miles from their original stand, in the height of the season; and do the big queen-breeders really mean to say that drones will fly 7 miles away from their homes, or, say, only 2½ miles, the queens meeting them half way, thus also flying 2½ miles? I shall try this next season here in the Alps, where I can easily tell black from yellow bees. I always thought, from the way bees acted and drones congregated in Palestine, that it was next to impossible to have queens mated at such distances. I left ten nuclei with virgin queens in the home apiary in Jaffa, one apiary being two miles away, some very considerable apiaries about four miles, and an apiary of about ten hives about one mile away. Well, not one of my virgins was mated. This was in June, 1889. I then concluded that, unless hives with drones were in the immediate neighborhood, they would not be mated, and consequently that queens can be mated pure, provided no other apiaries are within a radius of one mile. Again, as I am writing I remember that, in 1883, I was raising queens in Beirut, at the Lebanon Apiary, for Mr. Frank Benton; and having young queens continually, by June I had no more drones in the apiary, and I could not get my queens fertilized. In my trouble I wrote to Mr. Benton, then at Athens, Greece, to ask him how I could induce my queens to lay drones. They were all given up entirely to queen-rearing. He wrote some directions; but I had already bought native bees, with plenty of drones, a few miles away, and brought and transferred them into bar-frame hives. That helped me out of my trouble.

Your description of the "big Injun," p. 741, reminds us of our Arabs, in their haughty and indolent way: and the further you go among

the tent-living Arabs, the more you will find that the description of the red Indian agrees with the Arab or Bedouin, except that a real Bedouin will never work in towns or villages. If he does any thing at all, it is only in his tribe. The Bedouins, as a nomadic race, never keep bees, though they are very fond of honey and sweets.

What were the results of your slumgum experiments, p. 771, Oct. 15? I came here with 58 lbs. of cappings from extracted honey. These cappings were dripping with honey. I had no time to wait till all the honey had dripped out, so I proceeded to put them at once into two small solar wax-extractors. We had none of the huge California description. Our results were as follows: 14½ lbs. of pure yellow wax; 24 lbs. of brown honey (by the sun); 11 lbs. of residue; 8½ lbs. had evaporated. Total, 58 lbs.

We use the residue for the fire. It gives considerable heat, and goes a long way. I tried a smaller lot of cappings, which were put on a sieve; and after several days, when all honey that could possibly get out had run off, I had 1 kilogram (38½ ounces) of cappings, and the results were: 9⅜ oz. of pure yellow wax; 4⅛ oz. of brown honey; 12½ oz. of residue; the rest had evaporated.

A North-African drone was enjoying sunshine at about 11 o'clock, marking 64½° Fahrenheit in the sun, Dec. 12, in my Nice apiary.

Ph. J. Baldensperger.

Nice, France, Dec., 1892.

[We were not aware that any one claimed that drones would fly 7 miles to meet queens. If there is such a one, let him speak up. We have recorded instances of where worker-bees have flown 7 miles to an island in search of honey. We have had reports also of how bees were crossed with other bees 7 miles away. Or perhaps it was this way: That it was not safe to count always on pure races of bees when another and a distinct race was within six or seven miles. Perhaps Doolittle can help us. The results of our slumgum experiments were given on page 884 of our Dec. 1 number.]

HEREDITY.

IS IT THROUGH THE QUEEN OR THE WORKERS?

The question of heredity is an important one; and of late, in more than one quarter has there been some discussion as to traits inherited by bees. The matter is practical and important, else I would not touch it, for I am not capable of dealing with it as a scientist; but if I go astray I have little fear but some one competent will pick me up and set me back in the right path.

Probably all are agreed that it is important to have bees with certain characteristics, and that, by careful breeding, something can be done in the way of weeding out, fixing, or increasing qualities possessed by colonies under treatment. For years almost entirely the queen (the mother) has been considered in breeding. All agreed that the drone (the father) had perhaps an equal influence upon the offspring; but the difficulty of controlling fertilization made the queen practically the main one to consider. If at times some one ventured to ask, "Is an Italian queen raised by black nurse-bees as good as one raised by Italian workers?" he was promptly answered that the nurses had no influence on the character of the young queens fed by them.

Now, however, there are those who advance the opinion, that from the workers, rather than from the queen, come inherited traits; and these opinions come from such respectable sources—notably among those who advance them stands the able editor of the *Revue Internationale*—that they are not to be lightly set aside.

Mr. Bertrand, the editor mentioned, argues somewhat after this fashion: The young bee begins to feed the brood without taking lessons in feeding; later she produces wax, and builds combs without any apprenticeship therein; finally, some fine day she starts out; and, having marked the location of her home, goes to seek water, honey, or pollen. These instincts are possessed by neither father nor mother; the queen has the single function of laying eggs, and the role of the male is still more restricted in spite of its importance. How can the worker transmit these marvelous instincts, since she never has any descendants?

Then he asks if the worker does not transmit traits of character through the food given to the larvæ. This food is the product of her organs, secreted by certain glands, somewhat as the milk of the nursing mother is produced among the mammalia.

Mr. Bertrand fortifies his position by saying that he and others have observed colonies which, through a long course of years, have preserved the same good or bad characteristics, in spite of the introduction from time to time of queens raised in other colonies. In this case these characteristics must have been transmitted by the nurse-bees. As to the practical bearing, he says that, if this influence of the nurse-bees upon the progeny really exists, then, 1, the introduction of a new queen will not of itself succeed in changing the good or bad characteristics of a colony; 2, the nursing of royal larvæ should be entrusted to those colonies whose workers show desirable traits.

Careful practical observation ought to help us to reach the truth in this matter. I think most of us have been in the habit of thinking that an impregnated egg would produce the same queen, no matter in what colony reared. At the same time, we know very well that external influences have much to do with the quality of the queen raised. Hardly any one would expect as good a queen from a very weak nucleus late in the fall or very early in the spring as from a powerful colony in a heavy honey-flow. Moreover, we know that the food is the main factor that makes all the difference whether an egg produces a queen or a worker. We know, too, that in the human race the child is affected by the milk of the nursing mother.

Besides, how can a queen transmit qualities that she never possessed, and that none of her ancestors ever possessed? Here is a colony remarkable for the great amount of nectar gathered. Do they get that trait from the mother? She never visited a flower in her life. Here's a hardy race of bees from a cold, mountainous region, made hardy, you say, by the endurance of hardships and the survival of the fittest through many generations. The hardiness is an inherited trait, and it will take generations to breed it out. Let us see how that hardiness could be gained, on the ground that all transmission of traits must be solely through the queen. On this inclement spot first settled a swarm from a milder region. Hardships, such as they had not previously known, are met by the workers, but the queen is kept in the same comfortable warmth in the hive that she enjoyed in the milder region. How can she become any hardier? And if she is no hardier, how can she transmit increased hardiness? Or, suppose a colony becomes unusually vicious, can the queen transmit that viciousness, when she never uses her sting? But, as I said before, practical observation ought to help

settle the question. Let me suggest an experiment that is easily tried, and can be completed in two or three months. Suppose A is a colony remarkable for its vicious disposition, and B a colony equally remarkable for its mildness of temper. Remove the queen of each; let A raise a queen from an egg taken from B, and let B raise a queen from an egg taken from A. If inheritance is through the queen, then we may expect, at the end of three months, that the two colonies have exactly changed characters; but if through the nurse-bees, then each colony should remain its former self.

In spite of the difficulty of answering some of the questions asked, especially the one raised by myself as to the hardy bees in the mountain region, I confess that I am loth to make an unconditional surrender.

There are everyday facts on the other side that are hard to get over. Take the very case that I last supposed. Does not the experience of all practical bee-keepers teach them to expect a change in the disposition of the two colonies when the queens are changed, provided, of course, the young queens meet the same kind of drones? In that case it seems pretty clear that the principal factor in the case is the queen herself.

But it does not prove that the nurse-bees may not have some influence, however slight that influence may be; and if we are to raise the very best queens, it may be worth while to institute careful experiments to try to decide. It seems to me that here is an important field of inquiry for our experiment stations.

Marengo, Ill., Jan. 2. C. C. MILLER.

HIGH-PRICED QUEENS.

DOOLITTLE DISCUSSES WHO SHOULD AND WHO SHOULD NOT INVEST IN THEM; VALUABLE HINTS.

If fathers Langstroth and Quinby had been told, in the fifties, that a trade in queen-bees would have sprung up within forty years to such an extent that, during the year 1892, fully 30,000 queens would have been reared and sent by mail to nearly all parts of the world, it would have been hard for them to believe it; yet such are the facts, as we find them in the history made last year. This wonderful traffic in queens has sprung up for two reasons, the first of which is a desire for the improvement of stock; and the second, the call for queens by those who do not wish to raise their own, but wish queens to keep as a reserve force, ready to use in case of queenless colonies, or in giving to the queenless part of a divided colony, whether divided by the apiarist or by natural swarming. This latter class have in view only one object, that of procuring fairly good queens at a minimum cost, expecting no more of them than that they will produce plenty of good worker-bees to secure a bountiful harvest of honey, and preside over their colonies as all good queens should. The first, or other class, buy queens, or should do so, with a different object in view: that is, they want queens which have a value beyond being "fairly good queens," as they wish them for "breeding purposes," with a view to the improvement of the stock they now possess. The greater the improvement which can be obtained by rearing young queens from the one purchased, and crossing them with drones from the bees we already have in our apiaries, the greater the value of the individual queen; for therein lies nearly all of the extra value there is in such a one above those of the other class. Mr. Alley told us, a year or two ago, of having a queen worth $100; and A. I. Root has told us in the past of his red-clover queen, while others have spoken of queens of extra value as giving bees which were hardy for winter, giving bees capping their combs so as to present a snowy whiteness, etc.; but had you asked any of these if they considered there was $100 worth in such queens to place in a box hive, or in a frame hive which was worked only for the honey which could be obtained, they would have told you at once that their worth did not consist in the amount of honey the bees from this individual queen would produce, but in the good qualities she possessed as a breeder, which good qualities were expected to be perpetuated in her progeny, and in this way multiplied by 10, 25, 100, 1000, 10,000 or 100,000 times, just in accord with the number of queens reared from her. No one queen can be worth even five dollars for what extra honey her bees will produce over the ordinary run of queens; hence it comes about that a costly queen should be procured for only one purpose; which is, the *improvement of stock.*

I have been led to write this article because many, apparently, do not seem to understand this, especially those just entering the enchanted field of bee-keeping. Why I say "enchanted field" is because many go wild over the pursuit when they first begin, paying out money earned in other lines, that is needed in the family, for high-priced queens, when such queens are of little if any more value to them than would be a queen costing not over one-fifth to one-twentieth as much. Nor is this thing confined wholly to beginners. To illustrate: Two parties in California ordered queens of my $6.00 class, one ordering a single queen, and the other three. Not knowing any thing of either party I filled their orders without a word of advice to either. About a year after, I got a letter from each, one writing that he had kept the queen I sent him from laying all he possibly could, keeping her in a nucleus hive similar to what friend Alley does his choice queens, so that her life might be lengthened to its utmost limit, having reared about four or five hundred queens from her. These queens were giving him much pleasure, and they were not only the best queens for business he ever had in his apiary, but he was satisfied that the amount paid for the mother of them was the best investment he ever made. The other party wrote me that he thought I was unreasonable in charging $6.00 each for such queens as I sent him; that he had tested them side of the queens which he already had, and that he could not see that they produced enough honey above what his own queens gave to compensate for the large price he paid for them. Further correspondence brought out the fact that he had not reared a single queen from either of the three; and as one of them was not very prolific, he would not breed from any of them, for he believed they came from an unprolific race.

I might give many other instances somewhat similar; but as all would only illustrate the same thing, I will not, further than to state that a party in Australia took all the risk on queens of this class, getting only one there alive, and allowed her to die some months afterward, without rearing a *single queen* from her. If parties are not going to rear queens from those which they purchase, the lower-priced queens are just as good for them as any; and the purchasing of those of the costly grade is simply throwing away their money; and I am sure that friend Root and all other queen-breeders desire that all should understand about this.

One other point I wish to notice is the fact that some queens, after being shipped to dis-

tant places, are not as prolific as they were in the apiary of their birth. Some doubt that shipment ever injures the prolificness of any queen; but scores of us are convinced to the contrary. I have shipped queens to parties, requesting their return, had them returned as not being mailable to foreign countries, etc.; and while some were not injured as to their prolificness, others never came up to the standard of egg-laying afterward which they did before; yet, so far as I could see, their daughters were fully equal, reared after shipment, to those reared before, when they gave a maximum number of eggs. Therefore I would say to all, don't buy high-priced queens unless you expect to breed from them, and do not hesitate to breed from a purchased queen because she is not as prolific as you wish. G. M. Doolittle.

□ Borodino, N. Y., Jan. 16.

[Nearly all practical bee-keepers and queen-breeders will admit the truth of your statements. We have often been pained to see beginners order high-priced queens when we felt pretty certain that they did not know really what they were doing, or what they wanted them for. But as it is our rule to fill orders promptly, and send what a customer orders, so far as we can, we have no right to ask questions. Once we ventured to suggest to the intending purchaser of a $7.50 imported queen, that he had better get a few cheap queens first, as the letter plainly showed that he was a beginner. We received quite a sharp response, to the effect that, if we would mind our business, he would mind his. We have a number of times had complaints because the honey-queens which we sold a couple of years ago did not produce bees that would bring in from 25 to 50 per cent more honey than the other bees in the apiary, and that, therefore, the queens were a fraud. The only thing that we have ever expected of the honey-queens was, that they would produce a little more honey than the average. What we sold them for was for breeding purposes, in the hope that the daughters bred from them would be crossed with a new strain of drones, and thus make an unusually active lot of bees. We have had a good many letters showing that, in the hands of a careful and intelligent bee-keeper, such results have been obtained; and on the other hand we have been scored pretty severely by well-meaning but ignorant bee-keepers because no marked results were secured. We always advise beginners to purchase *cheap* queens first.

With regard to the egg-laying of queens being impaired on account of long journeys, we have always held that such long shipments had little or no effect one way or the other; and we do not believe that it does in a majority of cases. On the other hand, we have had many excellent testimonials of strong egg-laying on the part of queens after forty days' journey *en route* to Australia. As some of our good friends differ with us, it may be well to admit that a few queens may be so injured.]

THE CANADA (ONTARIO) BEE-KEEPERS' CONVENTION.

A CONDENSED AND INTERESTING REPORT FROM W. Z. HUTCHINSON.

Friend Root:—I have been over to the Ontario Bee-keepers' Convention. I went by the way of Stratford, and stopped and took tea with our friend Gemmill. His bees are all in packed hives out of doors. They are not chaff hives, but there are outer cases filled with sawdust, I believe. The cases are used in the summer to give shade, the packing being removed. I find that quite a number in Canada prefer this style to the permanently packed chaff hive. The chaff hive is too heavy and clumsy for manipulation. Mr. J. B. Aches was also the guest of Mr. Gemmill. In the evening we started for Walkerton, where the convention was to be held. Mrs. Gemmill went with us. I wish that more bee-keepers' wives could go with them to these annual gatherings. All along the way we kept picking up bee-keepers. I soon had for my companion that jolly, thorough-going bee-keeper, Mr. J. B. Hall. He is a splendid talker. I wish he would write, but he won't. At the Brantford meeting of the N. A. B. K. A. he said very little "in meeting." I wondered why, when what he said was so good. At Walkerton he was the life, or one of the "lifes" of the convention. Perhaps he felt a little more free to talk at the Ontario convention—that it was a little more "his own folks."

By the time that we reached Walkerton, one car was pretty well loaded with bee-keepers. The convention was not to begin until the next day, in the afternoon; yet these Canadians have a way of getting there on time—they don't come straggling in one or two at a time after the convention is half over.

Walkerton is in a valley surrounded by hills and terraces. There were two or three feet of snow. The thermometer was below zero. As the sharp jingle of the sleigh-bells greeted my ear, and I looked upon the quaint snow-covered buildings, and felt the crispness of the air creeping through my overcoat, the words, "a stern Canadian winter," kept running through my mind. Never before did I see so many men clad in big fur overcoats and caps.

Before saying any thing about the convention itself it might be interesting to say a few words about the Ontario Association.

In the first place, it is incorporated. It is incorporated that it may receive aid from the government. It receives $500 per annum, and there are no hard and fast restrictions as to how this money shall be used. The Association has to report to the government how the money is used, but it can be used for the good of apiculture, as the Association sees fit. The Illinois State Association receives a similar grant from the State, but it can use the money only in getting out a report and mailing it. This is more than is needed for this purpose, and it could be used—that is, some of it—to a great deal better advantage. The society has a board of thirteen directors. The expenses of these directors are paid when they attend the conventions. In choosing these men there is an attempt to secure the best men. It will be seen that the attendance of this many representative men is assured. Then there are affiliated societies that receive an annual grant out of the government grant; but before a society can be affiliated with the parent society, said society must have five members that belong to the parent, or Ontario Association. It will be seen that each affiliated society means five more members added to the parent society. Each year the Ontario Association makes a present, or gives a premium, to each of its members. One year it is a smoker, another a book, another a bee-journal, etc. All these things help to keep up the membership and attendance. I may also say that the Ontario Society pays its secretary $50 a year, and the treasurer $25. So far as organization is concerned, the Canadians are away ahead of us.

I might also add, that they have, in the person of Wm. McEvoy, a most efficient foul-brood inspector. While he is not exactly orthodox in his views of how foul brood may originate (that is, if I understand him correctly), he knows

how to cure it, and is doing a great work for Ontario. The government allows $500 a year for this work.

Another thing: They seem to be able to secure almost any legislation that they ask for. I suppose that one difficulty is that our whole United States is so large, and so many interests are clamoring for recognition, that bee-keeping is lost sight of. Another thing, we have been lacking in united effort and organization.

The first session was partly used in transacting routine and official business. After this the subject of making an exhibit of honey at the World's Fair was discussed; or, rather, the manner in which the honey should be sent and exhibited. Mr. S. T. Pettit stood up stoutly for having honey shown in the candied state. He said that that was the shape in which it would reach foreign markets, and that was the shape in which foreign visitors should see it. They ought to see it in the shape in which it would reach them when they bought it. Mr. McKnight contended that the first thing that the majority of purchasers of extracted honey do, is to liquefy it, and that is the shape in which honey ought to be sold. J. B. Hall said that most people would not know what candied honey was. There was nothing attractive about the appearance of candied honey. It resembles lard. The way in which to show honey is in the liquid state. It was finally decided that each exhibitor should be asked to send at least a sample of candied honey, so that the attendant in charge can show visitors the state in which honey may often be found. The government will pay all the expense of getting the honey to Chicago, putting it up in glass vessels, a man to take care of it, and will pay the expense of returning it if the exhibitor does not wish it sold. When it was asked how many intended to send honey, almost every hand went up. Unless some of the States bestir themselves, Canada will get the persimmons at the World's Fair, so far as the honey exhibit is concerned.

In the evening Mr. McEvoy read a paper on "How I Prepare Bees for Outdoor Wintering, and Care for them in Spring." The bees were crowded upon six combs of solid honey, and then the hive packed with dry leaves. He placed great stress upon what he termed the "constitution" of the colony. By this he meant the condition of the colony itself instead of its surroundings. He considered this of greater importance than the manner in which it was packed or the manner in which it was wintered. A colony in excellent condition in the fall as regards queen, populousness, stores, etc., he felt was almost certain to be in similar condition the next spring. Mr. Corneil called attention to the fact that a board was a very poor covering for a colony. It is a good conductor of heat. Wool and cork dust are excellent packing material. Where the hive is out of doors, and the entrance left open, but little is to be gained by packing beneath the bottom-board. Those who wintered their bees in the cellar testified as to the superior results obtained when the colonies were near the *top* of the cellar. Losses nearly always were heavier in the lower hives. McKnight and others put no hives nearer the bottom than about fifteen inches.

Mr. Corneil read a paper on "The Density of Honey." He showed how greatly honey may vary in density. That which is very dense is not sold at a higher price, but it is worth much more. There ought to be some standard of density. To test honey by inverting a bottle of honey and seeing how rapidly the bubble of air will rise, is not at all reliable. The variation of the temperature alone is sufficient to destroy the value of this plan. An instrument (hydrometer, I believe it is called) is needed to make a test; or, rather, this is one reliable and simple method. It is like a long slim little bottle. In the bottom is some lead. When put into liquid, the depth to which it settles into liquid shows the density, or specific gravity. There is a graduated scale on one side of the tube which shows the degree of density.

In the course of his remarks, Mr. Corneil said that, when thick* and thin honey were mixed thoroughly, as when part of a comb contained thin honey and the other part thick, and the honey should be extracted, the honey would remain mixed. That is, the thick would not settle to the bottom and the thin rise to the top. He gave examples of allowing honey to stand a long time in tanks, and then taking some from the top and bottom; and a test showed both samples of the same density. Almost the whole convention took issue with him. S. T. Pettit had found the honey so thin on top that he had used a long-handled dipper to stir up the contents of the can and make the honey all alike. J. K. Darling had found a thin stratum of water on top of his candied honey, and the remainder of his honey seemed to be thicker after this. Mr. Corneil said that this water might have been absorbed from the atmosphere. Mr. McKnight had found a stratum of water two inches deep on the top of his cans of honey. The thick but liquid honey could be felt below it as easily as a board could be felt with the finger. Mr. Corneil thought that this might be a sort of separation of the honey, or of its component parts; that the thin substance was levulose. Mr. McKnight thought it too thin for levulose. It was simply sweetened water. Some other member had kept one can in which he dipped off the top of the honey from the other cans, and the honey thus dipped off was "pretty poor stuff."

Here the discussion drifted off into crystallization, or, rather, the cause of crystallization. While it is admitted, even by scientists, that all about crystallization is not yet understood, there seemed little doubt that the crystallization of honey is caused, or at least aided, by light, air, change of temperature, the presence of water, and by agitation. The honey from which nearly all of the water has been driven off by evaporation is slow to crystallize—may never do so. Honey that would remain liquid, if left in the comb, crystallizes upon being extracted, even if immediately sealed up in a bottle. The same honey, if left undisturbed in the combs, might be uncapped and yet remain liquid. The agitation of the extracting, and the more thorough exposure to the air, may be what starts crystallization. Some even went so far as to suggest that the "germs" of crystallization came from the air, the same as in the case of fermentation; but Mr. Corneil promptly "called them down." Instances were given where honey left at home in the fall remained liquid, while that taken away over railroads, and exhibited at fairs, soon candied as the result of agitation. W. Z. Hutchinson had some that candied in three days at the Detroit Exposition, where placed over the dynamos that generated the electricity. There was a constant jarring. The Dadants turn their honey from one barrel to another to start granulation.

Referring again to the matter of heavy honey settling to the bottom of the can, Mr. Frith suggested that honey might be ripened, possibly, by running it through a "separator," the same as butter is separated from milk. Mr.

* In making this test the honey must always be of a certain temperature—60°, I believe.

Corneil's plan for ripening thin honey was to expose it in shallow tanks, covered with gauze or wire cloth, and very appropriately he advised that this be fastened on in such a manner that the bees *can't* get in.

While on the subject of crystallization, I might say that, while on the train going home, Mr. Pettit exhibited some crystals of honey that had been washed free from all stickiness. That is, some honey that had crystallized in large crystals had been washed in water until the small amount of uncrystallized honey had been washed away, leaving a handful of clean crystals that looked like a very light brown sugar. I could not resist asking, in a joking way, if it was quite right to be making sugar from honey. And right here I may say that the matter of sugar honey was thoroughly discussed, both in convention and out, and, as a result, a committee was appointed to secure legislation prohibiting the raising, importation, and sale of sugar honey. Some thought this action hasty, uncalled for, and ill advised; but as GLEANINGS is closed to any further discussion of the subject, I will not repeat the arguments of either side; but I should like to say a word in regard to the kindness and consideration with which I was treated in regard to this matter. After the session was over, quite a number came to me, some of them even laying their arm over my shoulder as they spoke, and said they hoped I was not offended by the action taken. It was a matter of principle, and not personality, and they were very glad that I came over; that to see on a bit of paper what a man had said sometimes gave a different impression than to meet him face to face. Of course, I explained that, so far as the *Review* was concerned, the discussion was at an end; that I had only the good of bee-keepers at heart; and if the majority said that I was taking the wrong course, I was more than willing to abandon it. This was all they asked; and to show their sincerity, quite a number subscribed for the *Review* right then and there. I came home feeling that I had been treated right royally, and wondering if we tried as hard to make it pleasant for the Canadians when they come over here. And right here, if the editor will allow, I should like to thank not only my Canadian friends, but *all* my friends for their kindness in this "latter-day" discussion. While they did not agree with my views, and even believed that their promulgation was working an *injury to them*, yet they stood by me as a *man*, and even upheld the *Review* as a model journal. This has given me a greater charity than ever for others. I even have a kindly feeling for the few who in moments of strong feeling have said harsh things.

I carried over a Crane smoker and a Bingham smoker. Mr. Corneil requested that I do so. He had a smoker in which the barrel was perhaps three inches from the bellows, and this allowed the introduction of tubes through which outside air could be induced to enter and join the original blast. With a lighted taper it was clearly shown that air was thus drawn in with the original blast. It was also shown that, even with only the nozzle put on the smoker, there would be some reaction—some air that would "bound back," so to speak, from the opening in the fire-barrel. With the closed tube of the Crane, it seemed to me that this reaction would be avoided; but Mr. Corneil agreed with Mr. Bingham, that the friction of the air in the tube and in the turns would rob the air of its force, so that the blast would be weaker than in the cut-off. He is going to take all three of the smokers home, and he thinks that he will be able to secure the use of a machine for testing the blast of air, and thus give all a test. I told him that I thought they ought to be tested when filled with planer shavings; but he said that that would bring in an element of uncertainty, as they could not be filled *exactly* alike. I admit this; but it seems as though the force applied to the bellows might also be an uncertain element, although I do not know how he intends to compress the bellows. Filled, is the way in which a smoker is used; and, even though it would be impossible to fill them *exactly* alike, it seems to me that the results, so far as actual practice is concerned, would be sufficiently exact if they were tested when filled. I think the verdict would be more satisfactory. Mr. Corneil believes that the arrangement that forces the most air into the base of the fire-barrel will also discharge the most from the nozzle, regardless of the obstruction caused by the fuel; but he admits that he *may* be mistaken.

The subject of incorporation of the North American and the non-affiliation of the Ontario Association was about to be brought up for discussion, when I told them of the action taken at the Washington meeting, and the probability being that incorporation would be dropped another year; hence it was not thought worth while to take up any time discussing the matter. In conversation with the members it was plain to be seen that the great mass of bee-keepers in Canada have no other than friendly feelings for the bee-keepers "this side the creek." As one man said to me, "When we meet we find that we are all human, and have the finer feelings that belong to humanity; and it is a pity that any outside official ripple can not be smoothed out." So far, I can not see that incorporation has done one cent's worth of good. If it will *eventually* do good, there may be some sense in retaining it. If it is to be of no more use in the future than in the past, and it causes useless friction between us and our neighbors, why not drop it? In addition to this, it seems to me that it would be a very graceful thing to do to hold the meeting of the North American, next year, in Canada, with a Canadian in the chair. W. Z. HUTCHINSON.

Flint, Mich., Jan. 21.

RAMBLE NO 77.

IN SAN DIEGO AND NATIONAL CITY.

While attending the bee-keepers' convention in Los Angeles I made the acquaintance of Mr. Arthur Hansen, of National City. From his appearance and language I supposed he was a New Englander, and was quite surprised to learn that he came from under the flag of Germany, and was born on the little sea-girt island of Fehmen, in the Baltic sea. Eleven years in this country, and several years on this coast, had transformed him into a thorough American, and an enterprising bee-keeper. While enjoying the many stirring scenes of the Cabrillo celebration I met Mr. Hansen again. The sweetness and harmony of our occupations led us to the renewal of our acquaintance. Our conversation naturally fell upon bee-keeping and bee-keepers in San Diego Co. San Diego is the shipping-point for a great share of the honey of this region, and the headquarters for bee-men is found in the supply and honey house of Mr. J. T. Lovett. Of course, we naturally gravitated to this great center of the honey business, and found that Mr. Lovett had been largely engaged in bee culture, owning and operating several large apiaries; but at present he devotes his attention to buying and selling honey, and dealing in supplies. His dealings in honey run up into the millions of

pounds. Large shipments of this honey are sent to foreign lands, and he has made many journeys to the old country in the interests of his honey business.

Mr. L. has a wide acquaintance with the bee-keepers of this country, and is doing good work in introducing a good line of supplies to his customers. I noticed that he sold only new 60-lb. tin cans and cases. The latter are made extra strong by the insertion of an extra board partition in the center of the case. The cans and cases were thus adapted to rough handling and long shipments; and, above all, the honey is never tainted with the suspicious odor of kerosene. In the long run, I think bee-keepers would be benefited by using such excellent packages; for, as a prominent bee-keeper remarked, it goes from bad to worse in the following ratio: If gasoline-cans will do, then kerosene-cans can be used; if good kerosene-cans are used, then poor ones will be used; and in the latter, the contents of the can become as degraded as the can itself. It requires much patience and care to clean a kerosene-can; and even after a thorough cleansing there is more or less trace of a kerosene odor.

HANSEN'S PETS.

In Mr. Lovett's bee-keeping days, the results secured in good seasons were truly marvelous. Twenty colonies could be easily increased to one hundred, and some surplus honey secured. His colonies had often brought in 15 lbs. per day, while single colonies had gathered as much as 785 lbs. in a season.

There are always more or less bee-keepers at this headquarters, and loads of honey arriving in those large wagons, with four or six horses attached, and which had come from the mountains, sixty miles away, and perhaps even further.

Among other bee-men at Mr. Lovett's I found Mr. I. A. King, of Vineyard, San Diego Co. Mr. King is a relative of A. J. King, of Arizona, and, like his kinsman, is interested in bees, and is the owner of several hundred colonies.

When two such bee-keepers as Mr. Hansen and the Rambler get together it may be surmised that some magnificent scheme is brewing. To further the scheme, it became necessary for me to go to National City, five miles from San Diego. Mr. Hansen here happily keeps bachelor's hall, without a hitch in his household affairs. From his cottage we have a view of San Diego harbor and its surroundings; and at night the electric lights of the two cities enliven the darkness; while from the light-house, away out at Point Loma, the red and white lights give alternate flashes, warning the mariner of the danger-points.

I found that, like all great bee-keepers, Mr. Hansen possessed a hobby in the shape of some fine, pure-bred water-spaniel dogs. When properly trained, the pups were sold for a good price; and one was under special training that would be sold for $100. This feature of the hobby appeared very profitable; and that our friend is an adept at dog-training I will demonstrate further along.

I made the intimate acquaintance once of another class of pe(s)ts, very plentiful in all coast towns, and especially plentiful and very neighborly in National City—the festive flea. I can not describe him; for when I wanted to get a good look at him he had just stepped out. Like the voracious Chicago bedbug, their fine work is performed in the night; and in the morning, judging from the thousand crimson spots on the under-garments, they had been very industrious. In relation to the muscular development of the flea, good authorities say that, if a man had the same development and power, he could jump 25 miles and eat several tons of provisions. As to the eating capacity of fleas, I can corroborate all that has been said about them, with the additional fact that, when a person becomes a pasture for fleas, dreams of the most horrid nature are induced. The most terrible dream I experienced on that first night with a flea was the sudden and startling appearance of that old Stray Strawing Matrimonial Bureau of Dr. Miller, with seven old maids and eleven widows. Dr. M. appeared in the dress of a Mexican desperado, on a grand hunt for California bachelors. The vision was so realistic, and the idea of being lassoed and brought face to face with such an array of curls and sharp noses gave me such a despairing sensation, and a desire to escape, that I suddenly awoke; and while I mopped the perspiration and fleas from my brow I rejoiced that it was all a dream. Thinking, in my half-awakend condition, that Bro. Wilder was in bed with me, I thrust my hand over to see if he was safe, and punched Mr. Hansen in the ribs. It seemed that he was also in the last stages of a flea dream, for he sprang bolt upright in bed, and shouted, "Well, who's a kicking?" This dispelled the last stages of our dreams, and we compared notes, rejoiced, and happily arose

while the dew was on the pumpkin-vines. With all the fervent, ecstatic hopefulness I possess, I do enthusiastically hope that Dr. M. will stay at home and attend to that straw-patch.

SCRATCHING.

Mr. Hansen's apiary is at present near his cabin, and consists of about sixty colonies. A great portion of them were obtained from houses and out-buildings in the vicinity. There is probably no portion of the country where there are so many wild swarms as on the coast of Southern California. The houses in every city and town are more or less infested. In a charming location, fittingly named Paradise Valley, Mr. Hansen showed me a dwelling, from the rear portion of which he had taken eleven swarms. The house was well stocked, for there was a swarm of bees under the shaded portions. Mr. H. writes me later that he has cleared the Bonnie Brae ranch of about as many more, therefore increasing his apiary. Mr. H. is an expert at this removal business, and can cut into a house and get the bees, and then replace the siding so that you would scarcely know where the swarm was taken from.

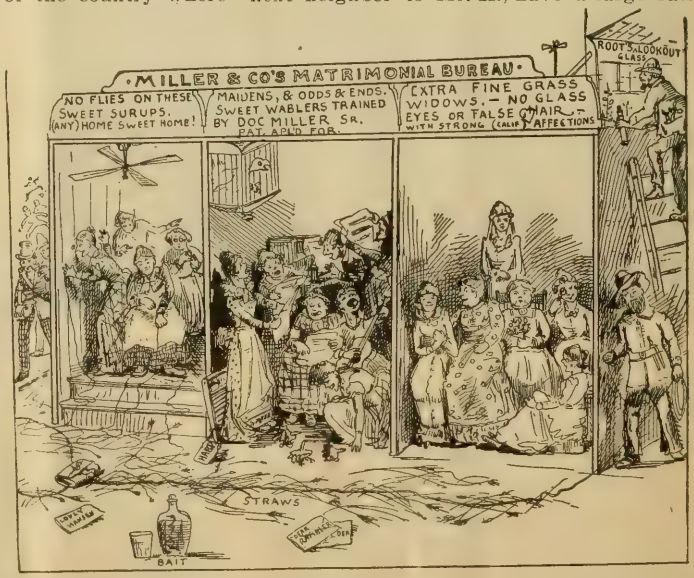
There is ample room in many buildings for the storage of large amounts of honey. The style of architecture, with many dormer windows and heavy cornices, favors the bees. One of these buildings, with many gables and towers, was erected for a sanitarium; but now the fine building is vacant, except for the accommodation of bees; and we saw very strong colonies busily working through crevices in the cornice.

Mr. Rowlson has charge of the building, and has a small and growing apiary, which he has started from bees he has taken from the building. In his first efforts at removal, a colony was taken from above a closet. In removing the boards from under the colony, the combs became loosened, and down came a sweet and stinging mass over the head and shoulders of Mr. R. From his vigorous remarks in relation to his flight, I think he prefers an inside rather than an outside application of honey. As Mr. H. is a veteran of the G. A. R., he now operates against such colonies by the more safe method of a flank movement.

When with Mr. Hansen in October, there was an average of four swarms per week coming to his apiary, and were found on vines or bushes around the house. These were evidently starvation swarms coming from the surrounding dwellings. That stray swarms are numerous may be inferred from the fact that a boy hived sixty swarms in one season, in various nondescript boxes, and made quite a profitable venture of it by selling them to bee-keepers.

Mr. Hansen's apiary is established in the city only temporarily, or for building-up purposes; but if here for only a short time, his apiary has attracted the attention of certain fruit-men, and the harrowing commenced. His plan of dealing with the harrower was first to join the Union and send for a number of court decisions. One was posted in a prominent position in the postoffice; another in the city-council rooms, and copies were given to the city attorney and others. Since this judicious distribution of documents he has heard nothing from the fruit-men.

While some are anxious to get rid of the bees, others are indifferent about it. Messrs. Kimball, next neighbor to Mr. H., have a large raisin



vineyard, and conduct their business without injury from the bees, and, of course, without harrowing anybody. It is more and more evident that it is only ignorant and prejudiced persons who make this war upon the interests of bee-keepers. If the so-called depredations of bees were such an unmixed evil, the fruit-growing associations would have much to say about it; but in meetings of pomological societies in every county, not a voice is raised against the bees or their owners; but many

times their value as fertilizers of fruit-bearing blossoms is referred to. That all might become thus enlightened is the wish of every bee-keeper, including the RAMBLER.

CHEAP BEE-ESCAPES.

GOOD ONES THAT ANY ONE CAN MAKE.

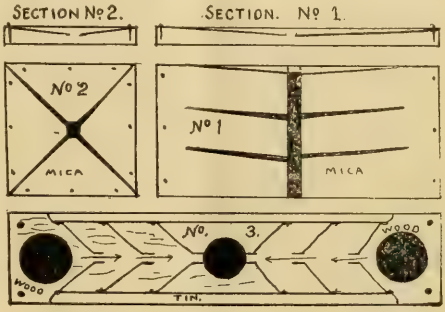
I was considerably interested in that cheap bee-escape that "doesn't cost a cent," described on page 23. I have tried almost every form of bee-escape that has been suggested in recent years, as well as many devices of my own that have never seen the light; but I will admit that this idea is new to me. I have but little doubt that it will work, just as the writer says; but the material (common newspaper) is of such a flimsy nature that it is not likely it could be used more than once. Even then it is probable the super would have to be removed as soon as the bees were fairly out of it, or they would soon eat holes through it. That empty super under it is also a serious drawback. Still, the idea is a valuable one, and may often serve us in an emergency.

During the past season I have experimented a good deal with delicate springs made of mica, such as is used in stoves. Some of the designs which I made and tested worked nicely, including two patterns illustrated in the December *Review*. My aim has been to make a more rapid-working escape than any now known, and in that I was not fully convinced that I had entirely succeeded. I have about a dozen patterns, all of which work about equally well; but as we want better rather than more escapes, I have refrained from publishing them.

I have now got an idea from this paper affair, that may lead to valuable results; at any rate, I shall give it a fair trial another year. Now, suppose that, instead of using paper and punching X holes through it, we make a substantial escape-board, and cut from two to four square holes through it. Bevel off the upper edge, and to this tack or glue little V-shaped pieces of very thin mica, making a sort of hopper, with a hole not quite large enough for a bee to get through in the center. If this is rightly made, the springs will readily allow the bees to pass down, but will not allow any to return. Another plan is, to make the holes in the board oblong, say 1 x 2½ in., using two pieces of mica, slitted to make four separate springs, each about large enough for a bee. This will allow several bees to pass through at the same time; and springs can be made of any length desired to make them work easily. These springs should be about half a bee-space apart at the ends. Of course, it can be made removable from the boards by making the escapes in small pieces, and fitting in the larger board. To prevent any danger of propolizing or gnawing by the bees, a little kerosene can be applied to the mica springs. It will be necessary to have a full bee-space under the escapes when the board is in position, so as to allow the bees to get out. I make no claim to originality, and, of course, have not tried it; but I am quite certain (from numerous tests with other devices) that it will work all right, and it will be quite permanent too.

When I started out it was with the intention of describing quite another escape, that I know, from thorough trial, is not excelled by any escape ever made, and can be made by almost any one, at a cost of about two cents each. The cut will fairly illustrate the device. To make the escape, take two sticks, ¼ inch square and 8 inches long, and on one side tack six little strips of perforated tin, pointing to the middle, at an angle of about 45 degrees. Accurate work is required, that they may be equally far apart, so they will be just opposite when in place. Tack a piece of perforated tin on one side, with a half-inch hole in the center for a bottom, and turn up ¼ inch at either end. This piece should be 2 x 8½ inches. Tack another piece of the same material, or green wire cloth will do, with a ¾-inch hole at both ends for a top piece, and the escape is done. To place it in the escape-board, cut a hole in it 2 x 8 inches, and tack pieces of tin on the under side, allowing it to project ¼ inch. The board cut out can be replaced when the board is wanted as a "sealed cover."

It is best to make one escape first; and when one gets the hang of it, any number can be



DIBBERN'S NEW BEE-ESCAPE.

made up. The material can be had at almost any tinshop, and ought not to cost more than two cents for each escape. That price certainly ought to bring them within the reach of all, even in a poor season.

All wire-cloth escapes, such as suggested by Mr. Larrabee, have proven to be unsatisfactory with me. Somehow the wire cloth, being so open, the bees do not seem to realize that they are cut off from the main hive, and usually make but little effort to leave. I have used from two to four escapes in a board at once, and something is gained in time; though, as bees act so differently, it is not easy to decide just how much. These escapes are not patented. All can make them; the cost is trifling; and if all are not supplied soon with good escapes it will be no fault of mine. C. H. DIBBERN.

Milan, Ill.

MOLDED COMB-GUIDES VERSUS THICK TOP WITH NO COMB-GUIDES.

TESTIMONY PRO AND CON.

Some time ago we asked for reports as to how the new molded thick top-bars were keeping off burr-combs as compared with the old-style thick tops. Our own experience has shown no difference, although we have had one of the heaviest honey-flows in years. But some of our friends seem to have had a different experience. Here is what a few write:

Friend Root:—Some men are born bee-keepers; some achieve bee-keeping, and some have bee-keeping thrust upon them. In the season of 1891, three swarms of bees alighted upon my premises, and I was forced to take care of them as best I could, having never had any work or experience with bees. I hived them all in box hives, and then I got a severe attack of bee-

fever. I read every thing I could get hold of on the subject of bee-keeping, especially the A B C, perusing it over half a dozen times. In the fall I put two of the colonies into a large box and packed them with chaff (the third I had lost by robbers). The bees wintered well, and were in excellent condition in the spring. They had several cleansing flights during the winter. Their stores consisted of white-clover honey. During all this time I looked about for a good hive, and determined upon the Dovetailed hive as the simplest and most easily handled. In the spring I transferred the bees to these hives with success. The first honey they gathered was dandelion. Next came white clover; and last, but not least, buckwheat. These two colonies I increased to 9 by natural swarming, and they gave me 400 lbs. of good comb honey, besides filling their brood-chamber with enough honey to winter them. I packed them in the same manner as last winter, except two colonies which are in Dovetailed chaff hives. All my bees are good at this date.

In regard to the Dovetailed hive, I wish to say that it answers its purpose perfectly. It is *the* hive for general use, being easy to manipulate, and perfect in all its parts. The only discrepancy I have found is the slotted bars of the section-holders. These should be a trifle thicker. When the super is full of honey they have bent down for me, and thus take away the bee-space underneath. I had plenty of burr and brace combs in my hives, all my bees being on Hoffman frames. I like them very well; the V edge is good. I. W. HOFFMAN.

Roselle, Iowa, Jan. 19.

[The next one reads as follows:]

In GLEANINGS of Jan. 1, page 21, I see you ask for reports of burr-combs on different frames. I had 100 frames, ⅞ inch thick by 1⅛ wide, that did not have any burr-combs on; but the 100 frames of the same dimensions, only a molding off for comb-guide, were badly burred together, top and sides. T. C. DE CLERCQ.

De Soto, Iowa, Jan. 13.

[These two, taken together with the testimony of Dr. C. C. Miller in favor of the old-style thick-top bar, might seem conclusive. Here is a letter just at hand, which confirms our own experience:]

Friend Root:—I see in last GLEANINGS you ask for reports concerning the improved thick-top-bar frames, in regard to burr-combs being built above them. I have both kinds, and can see no difference in them. Both kinds are free from burr-combs so far, and some of them have been in use two seasons. Don't think of going back to the old thick-top frames—no, never. Bees are gathering pollen from cedar and mistletoe. Prospects are good for a big honey crop. L. B. SMITH.

Lometa, Tex., Jan. 14.

HOFFMAN FRAMES.

We have given the new improved Hoffman frames a fair trial this season in our apiary, and I think they are a great improvement over the old style. We have had no burr-combs built on them, and my combs are not all braced together as they were with the old L. frames—so much so that, when I was manipulating them, the honey was continually running down from where the brace-combs were fastened together. I shall discard all other old-style frames, and have all my combs built on the new Hoffman frames.—*M. H. DeWitt in American Bee Keeper.*

[The comb-guide is almost a necessity with a good many bee-keepers because they think they can not afford foundation. To add an entra comb-guide to the bottom of the ⅞ bar is carrying things a little bit too far the other way. We seriously question whether, if the bee-spaces are correctly maintained, there would be any trouble with burr-combs on new molded top-bars. By way of a compromise we are preparing to make a slight change, so that the side of the bars will be nearly if not fully ⅞ inch wide, and yet leave a sufficient comb-guide for the fastening of foundation in the regular way, or for a guide to comb-building in the old-fashioned way. This is a change which will not interfere in the least with any thing already in use. So far as our own experience is concerned, we would just as soon, and perhaps rather, have the molded top-bars the same as we have sold for the last year and a half.]

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

HOW TO MAKE A SUN WAX-EXTRACTOR WORK WITHOUT ANY SUN.

"Necessity is the mother of invention." In the winter of 1889 we made a business of taking bees out of buildings, churches, schoolhouses, dwellinghouses, etc. Dr. Finegar's house turned out 18 colonies and 1300 lbs. of extracted honey. The weather was cold and wet, and the large sun extractor was of no use, and some larvæ in the honey had commenced to sour. "What shall we do?" Lewis George said. We went to the tinshop and had a hot-air furnace made that cost $2.00. This was connected by a hot-air pipe, 3½ inches in diameter, to the sun extractor, the pipe being attached to the lower end, under the screen. We made a hole for draft and ventilation on top of the screen, in the other end. Into the extractor we put a thermometer, built a fire, and stopped looking for the sun. We could heat that mass into a pudding, stir it up, breaking all the cells, and take it out as dry as chips; most of the pollen went through the screen; most of the honey was candied; but the heat was so intense that the bottom dropped right out of it. The honey and wax came out together, and wax caked on top. EMERSON BROS.

Santa Ana, Cal., Jan. 3.

THREATENED CONFLICT BETWEEN FRUIT-RAISERS AND BEE-MEN.

The relation between the fruit and bee men is becoming critical; threats of poisoning are resorted to by the former, and no doubt, to my mind, have been carried out to some extent. I thought I would try to educate some of the progressive fruit-men in regard to the great value of bees as fertilizers, and help matters from this quarter; so I sent GLEANINGS, No. 18, 1891, with Prof. Cook's article on "Bees as Fertilizers," to Prof. Hilgard, State University, for his indorsement, which would have great weight with the fruit-men here. It was referred to a Prof. C. W. Woodworth, who replied as follows: "Prof. Cook is an authority on bee-keeping, and I think what he says can be relied upon; but we must not forget that there is in California a very different problem in the case. It is the injury to ripe and drying fruits that the fight against bees is based upon."

I replied that we must not forget nor underestimate the great value of bees as fertilizers; how much fruit would set if it were not for the busy little bee? and is it not ripe fruit opened by birds and yellow-jackets, and in a fermented

state, that the bees are found to mostly work upon? Has the experiment station experimented any to determine the relation of bees to fruit?

I am afraid we shall not get much aid from this source; but I am going to use Prof. Cook's article to the best advantage, if you have any of the leaflets left. ARTHUR HANSEN.

National City, Cal., Nov. 20.

[Yes, that is the thing to do; give each a copy of Prof. Cook's article on bee-fertilization, and in addition tell them that, in that progressive State of Michigan, the bee and fruit men have met together in convention, and each side acknowledged their dependence on the other. The fact is, the fruit-men of California should be willing to put up with a little annoyance from the bees during the ripe-fruit season, for the sake of the good the bees do earlier in the year while the trees are in blossom. If the bees were taken all away for a year or so, the fruit-men would be very glad to get them back again, just as they did years ago in Massachusetts. History repeats itself.]

INTRODUCING QUEENS—KONIG'S METHOD; DIRECTIONS FROM A CORRESPONDENT IN NORWAY.

Among the many methods of introducing, the following affords some advantages: No hive is to be made queenless; no waiting 48 hours, nor even 24 is needed, for the new queen can be immediately introduced to a strong colony, etc. All this is of interest with a valuable queen. The method here described I call the "Konig," as I have it from Mr. Konig, of Lodz, in Poland, to whom I sent some Norwegian queens this summer.

When a queen arrives, prepare a hive for her with one honey-comb *without* brood, and two empty combs and a drone-trap before the entrance. Put the queen into a wire cage on the honey-comb; take one comb with bees from a hive (look sharp for the queen; if she is there, take another comb instead of it); brush the bees off before the entrance of the new queen's hive. In like manner go to another and a third hive, etc., and take a comb as before, and brush the bees off. The drone trap will catch a queen if such a one by mistake should follow the brushed bees. The new hive will then contain bees from three or more hives mixed together; the queen is set free after 24 hours, and is always cordially accepted.

ENGVALD HANSON.

Aamli, Norway, Oct., 1892.

GOLDEN'S SALT CURE FOR BEE-PARALYSIS CHALLENGED.

I read the discussion and experiments of T. S. Ford and J. A. Golden on the subject of bee-paralysis. Please allow me to ask some questions in regard to the subject. First, might not the bees have been poisoned by visiting fruit-trees that had been sprayed too soon? If not, might they not have got the poison from later spraying, where honey-dew was abundant? Might not the cure of Mr. Golden have been a success on account of less poison in vicinity, in the solution used in his case? Is salt an antidote for mild poisons? Do not bees go out of the hive to die? ALLEN BARTOW.

Milan, O., Dec. 5.

ANOTHER AND SHORTER WAY TO KILL SKUNKS.

Mr. France's method of killing skunks is amusing. To kill a skunk, take a stout stick, of convenient length, not over two feet. Walk slowly to within reach of the skunk, and kill him by a blow on the head. You can then carry him several hundred yards before the slight involuntary discharge of "smudge," which always takes place about five minutes after death. Young skunks can be taken alive by hand, without danger. I give all of the above from experience. GEO. M. WERTZ.

Johnstown, Pa., Jan. 7.

[Your plan will surely work if you can get within hitting distance. Still, if you have "been there" you know.]

HOW PAPA SHIPS EXTRACTED HONEY.

I will try to explain how papa ships extracted honey. We usually ship in tin buckets holding 12 or 25 lbs. We punch a hole through the lid, to give the air free passage. Then we stretch a thin wire tightly across the lid, to keep it from getting off, and to strengthen the bucket. We have shipped honey in this way for years, and it always arrives in good order. Our honey crop is very poor this season.

FRED H. GRAEPER.

Westphalia, Ind., Dec. 5.

[Good! let's hear from more of the little folks. If your papa doesn't like to write, and he has something good and useful, tell us about it.]

A NOTE FROM OUR SPECIAL ARTIST; THAT WILDER MAN; WHIRLWINDS, ETC.

A. I. Root:—Say! Is Hutchinson or Hasty, or any of the other bee-men, inquiring after my address? Don't give it them. After reading that Wilder letter, and seeing the way Rambler wiggles out from under the tub by a distant whack at his poor artist confederate, I am beginning to feel alarmed; and as my means of defense are extremely limited, I confess I don't know what to do. Perhaps the whirlwind is coming this way. May be some of the others will be after me now that Rambler has *sicked 'em* on. I didn't think that of him. If he "pours oil on the troubled waters" in the way that Wilder man says he does, well, what's to become of me? I am stationary, while he is skipping all over this beloved country. I can hardly bear my own load; yet he wants to lighten his so he can skip out still faster. But really as to that tongue, I expect soon to write a book on tongues, and with, perhaps, the assistance of the GLEANINGS people, we will explain something in regard to Wilder's tongue.

In haste, ——

GOLDENROD FROM FLORIDA.

Mr. J. Pierpont Murdock, Oxford, Fla., sends me specimens of goldenrod — *Solidago tenuifolia*, with a small bottle of the honey from it. He says that in October or November, some colonies gathered 65 lbs. from it; and that it grows two feet high, and bears a profusion of yellow flowers. The prairies are covered with it. He thinks the honey the finest he ever saw. The leaves of this goldenrod are very narrow, as the specific name indicates. The honey is *very white;* indeed, it has no more color than water, and is of excellent flavor. We are used to seeing golden honey from these flowers, and so this is very interesting. Is all goldenrod honey from the South so light? A. J. COOK.

Agricultural College, Mich., Dec. 19.

YERBA SANTA.

Mr. Root:—In your issue for Dec. 15 our friend Rambler spells "yerba santa" "herba santa" —a change in the first letter of the name only, and one which does not affect the pronunciation to any extent. This herb, or bush, grows all over the State, so far as I know, and is plentiful hereabout. I have not undertaken to write at this time to correct Rambler's spelling of the word, but I have taken this occasion to connect this plant with San Francisco's original name. The city spoken of was called by the

first white settlers—the Spaniards, or Mexicans—Yerba Buena, which, when translated into English, means "good herb." Yerba Buena was also given to the island now called Goat Island, which lies between Oakland and San Francisco, and almost in the track of ferry-steamers plying between the two principal cities of the State. Unlike "yerba santa," or "holy herb," yerba buena is a trailing vine of the mint species. It is much used by the early settlers (the Spaniards) as a medicinal plant—principally, I believe, for curing headaches. I would also remark that they use, for the same purpose, the skin shed by snakes, placing it inside their hat-band; but with what efficacy I am in doubt. Yerba santa, according to the Spaniards, is also a wonderful healing herb. Yerba buena is also used as a condiment in cooking, by old and new settlers. It grows everywhere in the hills and mountains, and is quite a honey-secreting plant.

Temescal, Cal., Jan. 4. W. A. Pryal.

THE OHIO BEE-KEEPERS' EXHIBIT.

A few days ago, noticing that other States were preparing for the World's Fair honey exhibits, we were wondering what Ohio was going to do, if, indeed, she would do any thing. Shortly after, a card came from Dr. Mason, asking whether we would be at home during the next few days, as he wished to talk over World's Fair matters with us. We promptly notified him that we would, and that it would give us great pleasure to see him. He came and thoroughly canvassed the whole situation, and the result is, that he has prepared a statement for print, that will fully explain itself:

OHIO'S WORLD'S FAIR.

Friend Root:—The Ohio Board of Commissioners for the Columbian Exposition at Chicago has requested me to collect, and put in place for exhibition at Chicago, Ohio's wax and honey exhibit; and I should like, through Gleanings, to ask such Ohio bee-keepers as have either comb or extracted honey, or nice beeswax, to spare, and are willing to help make the exhibit, write me *at once* for particulars. If any of those who read this know of others who have honey to spare will kindly give me their names and postoffice address they will confer a favor on our industry. It does not matter what kind of honey it is, for we want all kinds that may be produced, such as white, alsike, red, and sweet clover; basswood, buckwheat, strawberry, raspberry, aster, goldenrod, etc.; but if we wish to show sugar honey we shall probably have to go out of Ohio to get it.

Parties furnishing honey need be at no expense in the matter, except to send me a postal for further information. Please don't put this matter off for a moment, for we have no time to spare; and don't think that others will attend to the matter and furnish the honey, etc. I have personally made some effort to secure honey from bee-keepers, and find but little to be had.

Space for our exhibit has been secured, and our State Commissioners are not only willing but anxious to do all they can to aid us; and it now rests with us as bee-keepers to make our exhibit an honor to the State. We don't want to "take a back seat," but be at, or *very near*, the head of the column, in just the place to which we are justly entitled. We need not be afraid nor jealous of California bee-keepers, with their splendid and diversified honey product; nor of Canada, with her splendid honey-producing area, nor of any other State or country, but aim to do the best we can for Ohio, and do honor to ourselves and our industry by honestly placing on exhibition a correct representation of our products.

Now, please let me hear from you at once, and tell me what you have to spare, and ask all the questions you may desire. Address me at Auburndale, Ohio. A. B. Mason.

It gives us great pleasure to know that the doctor has charge of the Ohio exhibit, and we are very sure that, if bee-keepers will only do *their* part, Ohio will stand pretty near the front, if not actually in the lead. We availed ourselves of his knowledge and experience in the preparation of our own special exhibit of bee-keepers' supplies. We set it up in our establishment, and this afternoon, after all had been arranged satisfactorily to him and ourselves, photographed it. Now *any one* can arrange it by simply following the photograph.

GOOD TIMES.

I suppose you are always pleased to hear of good times. The past season in Hastings Co. has been a good one. I increased from 22 to 42, and got 2600 lbs. of extracted honey; 1200 lbs. of clover, 1000 lbs. of basswood, and the rest buckwheat and goldenrod. Season closed September 15. Extracted clover and basswood sells at 9 cts.; buckwheat, 7. I put my bees in the cellar Nov. 20. Jeremiah W. Wilson.

Roslin, Ont., Can., Dec. 21.

PECOS VALLEY GOOD FOR A HOOSIER.

I am going to move to Pecos Valley. I spent nearly ten months of last year there, and do not agree with Mr. Craig, of Abilena, Texas, about its not being any place for a poor man, as I belong to that unfortunate class. I think I was there long enough to know something about the country. It may not do for a Texan, but it will do for a Hoosier.

Hillsdale, Ind. C. F. Bassett.

SCARLET CLOVER.

One of our implement-dealers in this place is offering for sale scarlet clover (*Trifolium incarnatum*). They say it is an excellent honey-plant. Please tell us what you know about it, as many farmers and bee-keepers will be anxious to know. W. G. Fillsworth.

Avoca, Ia., Nov. 5.

THE TWO KINDS OF GRANULATION.

Mr. Hutchinson says that honey will granulate the same as sugar fed to bees. I say it will not, as the sugar granulates hard and flinty, the same as it did before it was fed, while all the honey I ever saw was soft when candied.

Clinton, Ill., Dec. 26. Henry Wilson.

"Lovely Gleanings" is what we said after reading the number for Dec. 15, which was something of a holiday number. It well deserves to be called the illustrated bee-paper of America, as almost every issue contains such beautiful pictures. May its subscription-list become longer and longer, and its "shadow ne'er grow less," is the New Year's wish of the old *American Bee Journal* for our Brothers Root.—*A. B. J., Jan. 5.*

[Many thanks, Bro. York.]

A CELEBRATED ACTRESS-FARMER.

A few days ago we ran across the following paragraph, which appeared in the *Agricultural Epitomist* of the current year. We do not know how much truth there is in it, but we reproduce it here in the hope that some of our subscribers may enlighten us further.

Madame Modjeska, the famous actress, lives on a ranch which lies at the foot of Santiago Peak, in California, 15 miles from a town or railway. She is an enthusiastic farmer, and takes great pride in her live stock, of which she has a large number. Her herd of shorthorns numbers over 400, and she has a singularly proportioned flock of Angora goats. These animals she has found to be very profitable.

Having invested in the ranch a large part of her savings from her theatrical earnings, she naturally looks closely after it to see that it pays a proper dividend on the capital.

Another branch of her undertaking is bee-raising. She has 600 hives of Italian bees, and sells a great deal of honey every autumn, the mountain meadows around her homestead being carpeted with the flow-

ers of the white sage, which are credited with producing the finest-flavored honey in the world. Madame Modjeska rises at six o'clock in the morning and is out all the forenoon superintending the management of her cattle and bees.

OURSELVES AND OUR NEIGHBORS.

Blessed is the man whose strength is in thee.—Ps. 84:5.

It was about seven o'clock Saturday night. Ernest and I were alone in the office. All the rest of the busy workers had gone to their homes. The office was still and quiet, and even the machinery was still. Ernest and John are much in the habit of choosing these still hours for their correspondence. The former sat at the phonograph, with a handful of letters, while he dictated in loud clear tones the various answers to many correspondents. In order to have the phonograph come out clear and distinct, one needs to speak slowly and plainly, pronouncing the words very distinctly. I had finished looking over a seed catalogue, and listened a little while to the replies made by Ernest. It almost made one think of the farmers' institute, where the speaker answers the inquiries one after another, but makes his answers so distinct and clear that all can hear them, even when he speaks to a crowded audience. Saturday night I always take a bath before retiring, and I started down leisurely to the engine-room to open a valve, that steam might go over to the house. There are some little Roots to be bathed besides myself, so we generally commence rather early. As I went through the different rooms, so warm and comfortable, I reflected that, although it was below zero outside, no pipes had yet been frozen enough to do any damage, and we were well fortified in every direction for even more cold. An immense heap of coal lay in front of the boilers; steam pressure was up to 60 or 70 degrees; the windmill tank was full of water; the great cistern was full, and an iron pipe ran down to Champion Brook, where we find we get the best water for running our boilers. The huge steam-pump, with its massive pipes and cylinders, stood all ready to spring into action if an alarm of fire should be given. I was thinking about all our appliances, how nicely they work; and the thought came into mind, that perhaps some time I should look back to this period of my life, and possibly feel sorry that I did not thank God oftener when I had so much reason to be grateful. Yes, besides all these other things, I am enjoying a degree of health that I think I never knew before; for my diet is still by preference new milk, graham gems, and honey. By the way, I am gradually losing the desire for and the need of sleep just before dinner. I have tried to take my accustomed nap for several days; but I feel so bright that it seems to be no longer needed. "What is the reason you can not sleep?" asked my wife; and I replied, "Why, the trouble is, I am getting *too healthy*." What a simple, insignificant medicine—new milk right from the cow! But let us get back to that Saturday night.

I had just opened my valve; and as I passed out of the door leading into the engine-room my eye glanced almost involuntarily to the three pressure-gauges attached to our sprinkling system and waterworks. Two of them are simply air-gauges. The pipes in our main buildings are filled with air instead of water, and no water ever gets into these pipes until some sort of fire opens the air-valves; then the water follows instantly. The air-valves indicated the right pressure of between 30 and 40; but the middle dial—the one that registers the water pressure from the great tank on the hill—to my surprise and consternation showed only about 15 lbs. of pressure, instead of 22, its normal state. What in the world did it mean, that this pressure should be so much reduced on this icy-cold night? I hastened to the stairway, where I could call Ernest. He dropped his phonograph pretty suddenly, and hastened downstairs to examine the gauge. It seemed that it had fallen a little more by the time we got there. We got a lantern, and with nervous haste began making examinations. Every thing seemed to be all in perfect trim, and we could discover no trace of escaping water anywhere. After looking all over inside, we visited the hydrants by wading through the drifted snow to the points where they were located outside. The clean white snow covered every thing, and no sight or sound betrayed running water. Then I made a visit down to the new railroad. This is below all our grounds, and escaping water must sooner or later come over the bank down into the ditch beside the track. Nothing of the kind was seen. I went back and reported. Ernest suggested that it came from the tank on the hill, and that the water was so cold it froze up before it could get an eighth of a mile from the top of the hill to Champion Brook. I felt sure that this was impossible, but finally made a pilgrimage through the snowdrifts up to the tank (expecting every minute to find a flood of water and ice), and walked clear around it. That, like the rest of our apparatus, seemed to be in perfect trim. Then we went back to the boiler-room. The pressure-gauge showed that at least 500 barrels of water had got away while we were making our investigations, and it seemed to be going faster and faster. We had been hard at work for an hour. We were both sweaty, and I was tired out and beginning to feel symptoms of my old nervous troubles. The anxiety had much to do with it. But how could one avoid feeling anxious when the last drop of water must soon be gone from our tanks, and our water-pipes, on which we depended, would soon be empty and useless? Ernest directed me to watch things while he took a lantern and went for the engineer. He came, but was as much puzzled as ourselves. Once before, the pipe leading down to Champion Brook was, by some misunderstanding, left open, and the big tank on the hill drained off into the brook during one night. It seemed as if there was no other place in the world where the water *could* get away; but the valve was closed securely. I insisted it was broken; and, as a further proof, I was sure I heard water gurgling through the pipe. The engineer and Ernest said it could not *be* broken; and to demonstrate their belief they unscrewed a union that separated the pipe, and let me look inside. I was becoming more and more nervous, and incapable of using what little sense God has seen fit to give me. Just then it came into my mind with such vividness that it sounded as if somebody were speaking:

"Look here, old fellow. Does it not look a little inconsistent, after all your preaching and teaching, to see you in this fluster and worry? yet during the whole past two hours you have not even thought to ask for God's wisdom and for his guidance in a matter where you all seem to be inadequate to the occasion."

I felt ashamed of myself, and began to pray. The fact is, our system of water and steam pipes has so accumulated from year to year that it takes a man with considerable brains to keep in mind the uses and purposes of this vast complication of pipes and valves, little and big. Why, right around the steam-pump, where we

were standing, the pipes were so numerous that the whole engine-room from floor to ceiling, almost, is filled with a literal network of them. There are pipes innumerable, from the size of your finger to the great water-pipes connected with the steam-pump, as large as your body. Then there are valves, from the size of a silver dollar all the way up to those as big as the wheel of a Daisy wheelbarrow. Some of the latter it takes the full strength of a strong man to move. There are the live-steam pipes and the exhaust-steam pipes; then there are the water-pipes connected with the sprinkler system, and another distinct system of water-pipes to convey water all over the premises. No wonder we became demoralized. There seemed to be a sound of rushing water, but no one could find where it was. I remember of fearing that if Ernest, the engineer, and myself could not tell where the trouble was, it was not likely that there was a living being in the *whole wide world* who could help us any. Some of the pipes had been put in before Ernest and the engineer knew any thing about it; therefore it depended ou my memory alone. There we stood, helpless. But the faithful, unfeeling pressure-gauge kept steadily falling, and in a little time more it would reach zero. My prayer was something like this:

"O Lord, we are weak but thou art mighty. We are helpless, but thy strength and wisdom are infinite. We come to thee acknowledging our need. Give us wisdom that we have not of ourselves, and help us to care for our property."

Of course, the prayer was only in my mind. No word was spoken. As soon as it was finished, the thought came into my mind, "Now, if help *should* come right off it would be only *another* instance of similar answers to prayer during the years that this business has been building and growing up." Then my faith began to rise. I had not found the text at the head of this talk just then; but the feeling came into my heart, very strong and vivid, "Blessed is the man whose strength is in thee."

Just at this crisis the engineer declared, "There is no leak at all."

Then Ernest added, "Why, look here! Put on the big steam-pump and see if you can get the accustomed pressure and hold it there."

The necessary valves were opened and closed, and in a moment we were ready to move the great pistons just as we would do in case of fire. All eyes were fixed, and we stood with breathless suspense as we watched the pressure-gauge attached to the pump. My heart began to sink, when the engineer said:

"Look out, boys! there is a tremendous pile of water getting away somewhere." But he added almost immediately afterward, "No! hold on a moment! All right! There she is!"

He let the pump work until the gauge showed a pressure of nearly 120 lbs. to the square inch, then stopped, and there it stood. The whole entire sprinkler system of all our buildings, and the hydrants over the whole of our grounds, were tight and sound. This located the difficulty somewhere between the tank on the hill and the factory. Said the engineer, "Your pipes are frozen up."

"Well, I declare!" suggested I. "If the pipes are frozen solid, the effect *will* be almost exactly the same as if the *water* were getting away."

And then we all drew a breath of relief. But where could they be frozen? They were deep under the ground, and the ground was deep under the snow. Then Ernest suggested, "It is the pipe under the big tank on the hill. We must get in there and build a fire at once."

Now, I shall have to explain, that, as the overflow-pipe was not sufficiently protected during the excessively cold weather, it had frozen up about two weeks before. The consequence was, the tank had become full, and had run over. Icicles as large as an ox hung over the sides of the tank, and the water had run down before the doors, and frozen *them* fast. It was a critical time, however, so I hastily decided what to do. One of us got a big sledge to open the door. Of course, the door had to be opened so it could be closed again quickly. The engineer took the hand-sled, with a couple of baskets of kindling, and neighbor H. was summoned to lend a hand also. I started on ahead with a sledge, for I preferred to smash the door in myself. I looked back and saw the engineer in a huge snowdrift, with his sled and kindling turned over, and neighbor H. just coming to his relief. As I expected, the bottom of the door could not be moved—not even with a sledge. Somebody suggested that the door would have to be broken; but I declared not so. The zero air must not get in there many minutes at most. The top was loosened. Neighbor H., the engineer, and the rest, with strong arms sprung the door in until I thought I could squeeze through. I got half way through and stuck fast. I imagined to myself how it must feel to be a rat in a trap, and I *was* in a trap, sure; but after a little more exhortation to my comrades to bend every nerve and muscle, I wiggled through. Of course, the zero weather was getting in to freeze the pipes up harder, and they might burst.

"Pile in your kindling, boys," I sang out; and by the time they got it through the crevice I had lighted a piece of waste saturated with coal oil. I threw it against the big iron pipe, piled on the kindlings, and then we had blaze enough to see that every thing was frozen up solid, sure enough. After I had got a big fire to going (as it was on the bare ground it was perfectly safe) I chopped away the ice from around the door, so as to let in the rest of the crowd. They were about as anxious to get out, however, as they were to get in, because of the smoke. The ice soon began to give way. Ernest thought it would take nearly all night to thaw out the ice; but I had faith to believe that the pressure-gauge in the factory was taking a back track already. I thanked my helpers, and told them they could all go home, except the night watchman who sleeps in the factory. He volunteered to see the pipe was thawed out. I was a little behind when they reached the innocent piece of mechanism which had caused such a hubbub; but the joyful news was soon proclaimed, "Hooray! hooray! the pressure is right already!"

We sat down and rested a little, and then went home. I was wet with perspiration, notwithstanding the low temperature. In our search we had been obliged to be first outdoors and then inside, in such rapid succession that we did not dare to take off our overcoats, overshoes, and fur caps. I had my bath after all, and went to bed a little before midnight, rejoicing in another sharp and clear evidence of the truthfulness of the many Bible promises, to the effect that the great Father above *is* "a very present help in trouble." The next morning, at our responsive readings at church, my eye and ear caught our opening text, "Blessed is the man whose strength is in thee," and you may be sure my heart echoed an emphatic amen.

Let us now look at another picture. Some time ago an old acquaintance got into trouble with a neighbor in regard to a division-line fence. It ended in a quarrel, and in a fit of anger my friend transgressed the laws of our land. Although a man of many excellent qualities, he has, like the rest of us, peculiar individual traits. One of these is, that he has

always been exceedingly independent. From childhood up, he has seemed to have a special fancy to take care of himself, and he has lived to be nearly sixty years old, without "asking any odds of anybody." I have often talked to him about this trait of character, and have told him that it would get him into trouble; but he seemed to think he was sufficient for any occasion that might come up. After the quarrel with the neighbor, he told me what he had done. I felt pretty sure that he would have to go to prison for it; but he flatly declared that he *wouldn't* go. I labored with him long and earnestly, and finally was rejoiced to hear him say that, if his lawyers *were* disappointed, he would be a law-abiding citizen as he had always been. I think his lawyers did very wrong in telling him that there was not any danger at all, and that they would get him clear, without any question, provided he could furnish the *requisite means*.

I now want to make some extracts from a letter he wrote to me while in prison. He does not know that I am going to do this; but I am sure he will pardon me when I tell him that his honest confession may be the means of helping many others who have got into trouble just as he did; and it may be the means of *helping* many others out of trouble in just the way *he* has come out or is coming out. You will readily gather from his letter that he has heretofore been an unbeliever. In fact, were it not for the fact that I know his handwriting so well, and his way of speaking, I might think it almost impossible such a letter should ever come from him at all. Of course, I have exhorted him again and again to say, "Thy will, not mine, be done," and bow in submission to Him who holds our very lives, and each breath we draw, in the hollow of his hand. Here is the letter that brought tears to my eyes as I read it:

Dec. 10th I lay in my cell, sick and discouraged. I said to myself, "I have always been independent, and relied on myself, and now I do not know what to do." I knelt down and offered to follow God hereafter, and leave every thing to him, if he would tell me what to do. Immediately he said, "Get back into bed and stay there." Pretty soon the cell-tender came along and said he would have to take my name and number to the doctor. After a while the doctor's assistant came and gave me some medicine for my cold and cough; and during the day they sent me some crackers and tea. Next morning I was told by the Lord to stay in bed; and the cell-tender reported me to the doctor again. He sent word to me to dress myself and come over to the hospital. I got upstairs into a warm room, with a good big coal fire, rocking-chairs, and good beds. I undressed and went to bed. I had not been by a fire for months, and needed good nourishing food. I lay there for several days, but finally got able to be up Christmas. The doctor and some others got up a fine dinner for us; and after dinner I felt so grateful that I could not keep still, so I got up and expressed my gratitude, and ended by giving the donors a vote of thanks. My breath was short, and it was with great exertion; but I was listened to with respect.

You may think it a little strange, the expression he uses, where he speaks of the guidance of the Holy Spirit; but knowing him as I do, and having had many similar experiences of my own, I think I can help our readers to look at it as rational and reasonable. Perhaps for almost the first time in his life he has decided to put his own will and judgment aside; it is not to be *himself* any more, but the *great God above*, who *directs* what to do. *God* is to be the teacher and *he* the pupil; and all alone by himself he makes that, perhaps, almost his first prayer. He promises to follow the teachings of the Holy Spirit. Now, what would the Holy Spirit be most likely to direct under such circumstances? Some of you may perhaps think it hard to believe that he would get any direction at all; but we have plain Bible teachings for it. "Him that cometh to me, I will in nowise cast out." This poor penitent soul had got back, like the prodigal son; he is *waiting* for orders. Our friend tells it as though verbal orders were given him. Perhaps I may add, the quotation-marks are my own. The first command of his new teacher was very simple—"Get back into bed and stay there." That was all God wanted him to do for the present. My experience has been with many like cases, that the first thing a new-born soul is called upon to do is always very simple and easy. He obeyed as well as he knew how, and then commenced the workings of the vast machinery of the universe to bring out the full answer to that brief, simple prayer, and lead that new-born soul from the darkness of unbelief, into the light of a Father's love. First a humble servant of the government comes and looks after this particular patient. He decides, and it happens the decision comes for a wonder on this particular morning. No, it did *not happen*, either; neither did it *happen* that the doctor's assistant came soon after with some medicine, and then with some simple refreshment. The next morning, you will notice, he again asks for orders for the duties of the day; yes, even if you are on a sick-bed, God is pleased to have you come to him with the opening of a new day, saying, "Lord, what wilt thou have me to do?" The directions are plain and clear, as they were the day before: "I was told by the Lord to stay in bed." He obeyed again, and in a little time he was rewarded by a summons from the doctor to come upstairs into a warm and cheerful room. Oh how many times I have seen a new-born soul invited to step up and out of the miry clay, and put his feet upon the rock, as David speaks of in the second verse of the fortieth Psalm! After this there followed almost three weeks of confinement to a sick-bed. By Christmas time, however, the doctor and others concluded it would be safe to give him, with some others, doubtless, a good dinner. His gratitude for this kindness is just what we might expect. One of the best evidences that a soul has come from darkness into light, is a feeling of gratitude and thankfulness to the world about him, as well as thanks to God. No doubt, all present at that little dinner were touched by his few words spoken in weakness. Perhaps this incident indicated that it would not be too much of a *test* and *task* for his Christianity to invite him to ask a blessing at the table. See the following:

New Year's day we had another nice supper, and I was requested to ask the blessing. I shall never forget it, and I guess the other prisoners will never forget it either. With the tears running down my cheeks, and in a trembling voice, I said, "May the blessings of Almighty God rest on this bountiful repast, and the getter-up of the same; and may the workings of Providence so shape things that each of us, before the close of another year, may be free, and become good and law-abiding citizens of the United States, and be with our friends and families."

I wonder if all the prisons in the land are so fortunate as to have such wise and *godly* officers as the ones mentioned here. Like a true soldier he did not flinch, nor think of evading duty. It must have been a great trial for him to ask this blessing; for, if I mistake not, he would hardly have consented, a few months ago, to *permit* a blessing to be asked at his table; but we may be sure he felt happier and better for a good while afterward. God honors those who are not afraid to acknowledge him before men. "Whosoever shall confess me before men, him will I confess also before my Father which is in heaven."

Now, here comes in another peculiarity of this friend of mine. He has always been ready to take care of himself as I have told you, and, as a natural consequence, it is very hard for him to own up that he has been wrong. From what I know of him, I should expect it to be hard for him to let go of all his unbelief at once. He has read so many books and papers published by unbelievers that his sympathy still hangs with them, and probably will. Never mind. It is not so very strange if he is prepared to give a good many of us a just and right reproof. Read the following:

It hurts me to hear a man abused because he is an infidel. It hurts me to hear a Christian quote men as *infidels* because they are bad men. There are very few infidels in this prison.

The next is exceedingly characteristic of him:

I do not feel like a man yet, but like an infant feeling its way. But one thing is sure; and that is, I have made a promise to God to give one-tenth to him, as he shall direct, as soon as I get out of here, if I ever do.

He has always been liberal, even to a fault; and it was just like him to pledge a tenth of his income; but, true to his nature, he insists that God, and God only, shall direct how that tenth shall be used. No human wisdom is to say to what church or to what Sunday-school, or whether, in fact, it is to go to *any* church or Sunday-school; but the Holy Spirit is to guide and direct. The very best part of his letter, to me, is that point where he says he feels like an infant feeling its way. He is a child yet, and must be led and directed as a kind parent leads and directs a little child. I wonder whether he has found it in his Bible where it says, "Except ye become as little children, ye can not enter the kingdom of heaven." I am sure I need his kind reproof, where he speaks about harshness and lack of charity toward infidels. I have sometimes thought I would try not to use the word "infidel" any more. Now, then, let us go back to this brief little sermon that comes from one of the prisons in our land.

And now, dear friends, let us not abuse others because they can not see as we do. Remember kindness and charity. May the blessing of God rest upon you all is the prayer of your old friend.

Truly, "Blessed is the man whose strength is in the Lord."

NOTES OF TRAVEL

FROM A. I. ROOT.

WASHINGTON, CONTINUED.

There was so *much* to see in the city, and the bee-keepers, like myself, were so anxious to see the sights, they crowded the business along on the evening of the second day, and, by universal consent, devoted the next day to sight-seeing. Our good friends Benton and Danzenbaker volunteered to go as guides. Our first point of interest was the Capitol building. I was somewhat disappointed that none of the crowd seemed to find as much to hold their attention in that one piece of statuary as I did. It is not to be wondered at, because statuary and wonderful paintings abound everywhere in and about the Capitol building. There is no use in trying to describe the Capitol of our United States. There have been many criticisms, no doubt, in regard to the amount of money expended on the edifice. But we may philosophize a little, I think, as the boy did when he said the Fourth of July comes only once a year. There is only one Capitol building in the United States, and surely no child of Uncle Samuel would want to see it a shabby affair, or very much behind the State buildings at the capitals of many of our States. The dome is visible for many miles in every direction; and no wonder; for it is 180 feet in height. The rotunda is 96 feet in diameter. As you go inside and look up it seems almost like the starry heavens above; but here, in place of the stars, is a magnificent painting, or collection of paintings. I have been told how many thousands of dollars this single painting cost, but I can not remember now. Artists are still at work, and nobody knows when it will be finished. All about this great central room are also wonderful pictures commemorating different events in our nation's history. Our guides kept admonishing us that, if we stopped to look so long at some single piece of work or statuary, we should never get through it all; and as we passed from room to room, whenever we happened to come back into the room we had visited before, we found just as much of interest and wonder as we did the first time. We were a good deal like a pack of innocent juveniles. We kept looking and staring everywhere; and our comrades kept admonishing us, "Oh! you need not stop there, for you have been there already. Come over this way." And so it was. I am not politician enough to give the names of the different rooms. I remember something about the Senate Chamber and the Hall of Representatives; marble stairways without number; wonderful pieces of architecture, besides the paintings. The part of the building devoted to the library was of interest to me. The books and periodicals have now accumulated in such vast quantities that a new library building of gigantic dimensions, as it seemed to me, is being rapidly pushed forward to accommodate the volumes. We did not go into the White House, because somebody was sick there, and a card was turned so it showed, "No Admittance to Visitors." This White House was partially burned by the British troops in 1814; and to restore its blackened walls, they were painted white—hence the name, White House.

I was greatly interested in the greenhouses and the botanical gardens, as a matter of course; and the sight of pine-apples growing and ripening, even though we had an intense freezing temperature outdoors, was a novelty indeed. This particular greenhouse was built, it seems, to test new varieties of pine-apples. Now, I had always supposed that a pine-apple was a pine-apple, and that that was all there was to it. But how many kinds do you suppose the government is testing? Why, there must be forty or fifty—may be a hundred. What is to become of us if every thing is to continue to develop and amplify itself, and spread out after this fashion? We have been condemning seedsmen's catalogues because they had thirty or forty varieties of peas, as many of tomatoes, and so on with every thing else; and other fruits have got to be put through a similar course of training. Pine-apples, oranges, and even lemons, are to have new varieties until their names are legion; and just now there is not only talk about having oranges and lemons, without any seeds, but apples and pears, and even persimmons. It is too much trouble, you see, for Young America to get the seeds out and throw them away. But, "Here! come on!" I imagine I hear the guide saying, because we speculate too long on some one art or industry.

Somebody asked if I wanted to see the fish. To be sure, I did. I always want to see fish. Fishes come next to flowers. But even when I expressed my willingness, I did not dream that

we were going to be treated to a glimpse from the depths of the sea. A room full of the aquariums, and the usual accessories of fish-hatcheries, first enlisted my sympathies and interest. Then somebody suggested that we should go down into a sort of cave or grotto. This cave is under ground, and all the light that comes in comes through the aquariums arranged around the sides of the room, up near the ceiling. The sunlight strikes the surface of the water, and then comes through the water to light up the low darkened room. This seems to be something new in the line of aquariums. It was new to me, any way. The fishes and the marine plants came out in that subdued and refracted light through the water, with startling distinctness. I thought I had seen beautiful collections of ferns before; but I never saw any vegetation in the open air that could compare in beauty of form and coloring with this vegetation of the mighty deep. Most of us have admired the colorings and markings of various gold and silver fishes; but the fishes collected here are wonderful beyond description. In some of the museums we saw birds of paradise; but here were *fishes* of paradise, promenading and sailing about among the gorgeous fernlike mosses and shrubbery. To add enchantment to a scene that seemed almost a dream already, soft fleecy clouds were floating through the briny deep—I mean the salt water in these glass cages. When I asked for an explanation of those clouds that rolled so leisurely through the water and among the fishes, I was told that it was simply small globules of air in fine subdivision. On a foggy morning, microscopic particles of water float through the air we breathe. Well, in the ocean—at least so it seems—similar microscopic particles of air float in clouds through the water; and the effect I admired so much was produced very simply by letting a fine stream of water, under pressure, shoot down into the aquarium. The slender stream, in shooting down to the bottom of the glass tank, carried minute particles of air along with it, and these floated away in cloudlike bodies as they slowly came to the surface. I made up my mind that such an arrangement must be very soon a sort of annex to that wonderful new greenhouse that works for nothing and boards itself across the street from where I write. Well, I have not got at it yet.

Most of the crowd kept expressing a desire to visit the Treasury of the United States. Somebody said that Uncle Sam was kind enough to let his children handle a million of dollars just a little while, to see whether it would make them feel happy, you know. Well, I was not very anxious, for I knew beforehand that the million of dollars would not make me feel happy a bit. The trick I had learned, of how to make an underground aquarium, was worth more to me than holding the million of dollars. Nevertheless, we hustled off to the Treasury. We saw smart, nice-looking girls counting out sums of money so rapidly that it looked like a sleight-of-hand performance. Then we saw them printing bank notes, with great numbers of beautiful clean printing-presses. And, by the way, the biggest part of the work of making money, and handling it, in the Treasury department, is in the hands of the women-folks. I almost had a mind to feel hurt about it, for it looked to me as if Uncle Samuel was just a little partial to nice-looking girls, or else he was afraid to trust his boys with so much money.

By the way, I want to say right here that I was exceedingly gratified to see how much pains is taken in Washington to let every American, or anybody else, so far as I know, go everywhere and see how every thing is managed. It reminded me of the words of our Savior, who said to his enemies, when they tried to make up some charge against him, "In secret have I done nothing." And it looks to me as if it were just that way in Washington. Placards were put up in various places, to the effect that visitors must not offer fees of any kind to any of the guides or employes of the government, for they would not receive them, even if offered. Those who talk loudly of the extravagance and trickery of our government should go and see how every thing is open to the eye of Columbia's children.

In the Treasury department it was very much as it was in the Capitol—there was so much that was curious and wonderful, the guide could not get us to "move on." Finally I began to think I would rather see less, and understand it, than to see so much and not know what I had seen. I felt as did Josh Billings when he remarked, "What is the use of knowing so much, when so much you know *isn't so?*"

Just at this time Mrs. Root began to admonish me that we were getting behind. "Oh, no!" said I, "we are not. There they are." But she insisted that that was not our crowd. You see there were a great many other crowds of "innocents abroad," like ourselves, but I saw friend Hutchinson, of the *Review*, following in that crowd, and I concluded he was wise enough and big enough to know what he was about; so we just rested our faith on him; but it transpired that he was following a lot of strangers instead of our own people. Then there was a quandary. We looked here and there, up and down aisles almost a quarter of a mile long; ran upstairs and downstairs, and then W. Z. H. very kindly volunteered to find the crowd and bring them back if I would just "stand right there by that post." Then he dived down into a dark-looking stairway, and that was the last of him. When we got pretty nearly ready to feel as if we had been cruelly wronged, they burst upon us, laughing at our discomfiture, and making fun of us because they had had the privilege of walking *around* the 25 millions of silver dollars, and we didn't. It turned out afterward, however, that they did not *see* the dollars at all—they saw only the boxes that somebody said *contained* silver dollars. After that I saw a lot of folks holding a bundle of papers that a white-haired kindly-faced old gentleman was passing from one to another. And then friend Danzenbaker said, "Why, look here; Mrs. Root wants to hold a million of dollars. I know by her looks." One of the bee-men passed the bundle over to her, remarking, "There! that is just my luck. Money has been slipping through my fingers all my life, and this time I have actually let slip a whole million before it did me a particle of good." Mrs. Root seemed to enjoy handling a million about as much as the rest of us. Oh no! it was not *silver* dollars, nor gold either, for that matter. Somebody said a million of dollars in silver would weigh about 31¼ tons avoirdupois. You know silver is getting to be cheap nowadays, because Uncle Sam's children are finding so much of it scattered around through the Rocky Mountains and elsewhere.

After our visit to the Treasury building we went down to see that Washington Monument, that I told you about, in the morning. It is 555 feet 5⅛ inches high. I do not know why they are so particular as to put on that ⅛ inch, unless it was that some crank on accuracy might want to know just *exactly*. It is 55 feet square at the base; inside, 25 feet square. The foundation in 38 feet deep. The bottom of the foundation is 126½ feet square. The monument tapers ¼ inch to the foot. The elevator will

carry up only 30 or 40 people at once. Ernest could not wait their slow motions, and so he with several others went up on foot. The cost of the monument was $1,300,000. It takes 9 minutes for the elevator to go up, and 8 minutes to come down. I went up with the women-folks, but they packed us in so tight I decided to go down on foot with the boys; and it did not tire me a bit, either. You see, they have lots of nice new milk there in Washington, as well as here in Ohio. That is why I was not tired. The weather was very cold; and after we had got pretty well chilled, up at the top of the monument, among the crowds of people that are there all the while, somebody found a corner where there was a stove. I can not tell you how one feels when looking straight down more than a tenth of a mile. One of the first things to surprise me was to see a lot of fish-ponds belonging to the hatchery, right close up by the base, while I felt perfectly certain there was no such thing there when we started up; and then friend Danzenbaker explained that, as you go up in the air, things seem to swing up close to the point from where you started. I happened then to look at a little lake that I had not noticed before.

"Why," said I, "friend Danzenbaker, why in the world do they let such little bits of children go out on the ice?" And then he told me they were not children at all—they were big people. Why, as they moved to and fro they reminded one of swarms of bees; and they scarcely looked any bigger than bees.

I am now going to find fault with just one thing I saw in Washington, and I am going to talk plainly too. It is not Washington I am going to find fault with, however, but it is Uncle Samuel's children. A great lot of them ought to be treated as children, no matter how old they are; and if Uncle Samuel would take them across his knee and give them a right smart spanking—every mother's son of them—I think it would be a blessing to our nation. I told you I went down from the top of the monument on foot. I am very glad indeed I did. There are 898 steps and 50 landings. At each landing you walk on a level floor about 25 feet. This rests you for the next stairway. Commencing at the 30-foot landing there are 199 memorial stones. These stones are beautiful pieces of marble, furnished by the different States in the Union. Many of them are furnished by different organizations and different industries. They are not only the finest contributions in the way of beautiful stones, but the carving and statuary are specimens of the finest workmanship from each of the different States. These stones, with their various inscriptions, are a museum of themselves; they also ought to be a source of pride and admiration to each of the different States. Well, now, what do you think we saw? Why, simply because those who planned and built this monument, that cost over a million and a quarter of dollars—because these good people did not see fit to put water-closets at convenient points on these long stairs, our American people have been making a water-closet of almost *every corner* on those fifty landings; and this disgusting liquid is running from top to bottom of this whole great monument, staining, defacing, and making disgusting these beautiful marble mementoes of the contributions from all over our Union. Perhaps one reason why it passes unnoticed is because people of wealth and influence, as a rule, go up and down on the elevator; but if nobody else has yet lifted up his voice in protest against this piece of vandalism, I for one feel like taking upon *myself* the responsibility of saying that, if the rest of the States in our republic can stand it, the State of Ohio *can not*—at least, there is one individual who is not going to stand it any longer and keep still. I do not know that I ever undertook to speak for my native State before; but I do it now. Just one thing more:

In the Treasury department there is a beautiful park, with trees, shrubs, statuary, etc. All of the trees are named in both plain English and Latin. It seems to be a collection of the forestry found in the United States. I have not time to describe it any further now; but in this beautiful park there is a fine water-closet, for the use of gentlemen. Running water, that even in zero weather pours into marble basins, in order that every thing may be kept clean and sweet, is provided for visitors. How do you suppose they are used? Why, instead of appropriating the marble basins, made at so much expense for the very purpose of teaching us cleanliness and decency, the great public have been making the floors of this little building so nasty that one can not find a place to set his foot, should he attempt to reach these nicely arranged conveniences. I walked on the heels of my overshoes as I went in, and then I afterward cleaned them off on the grass as I went out. Shame on you, ye men and boys of America! I have taken up this subject once before, and there has within a few years been a great reform on the grounds of our State fairs as well as our county fairs; and our exposition buildings and other places are now generally well managed.

In the Smithsonian Institute, which I can not stop to mention here, there were beautiful rooms for the accommodation of both men and women. The guideboard read something like this: "Gentlemen's apartment for public comfort." In the inner rooms were plain directions and requests, so that it hardly seems possible that anybody who presumes to be half way civilized should be guilty of such things as I have mentioned. I believe it is true at the present time, that no hotel can make any pretentions to being first-class unless this thing is kept in bounds; but I have been told that, in many places, they find it necessary to hire a man to watch people constantly, and insist that they behave themselves like educated and intelligent beings, instead of like dumb brutes, that can not be expected to know any better.

Dear reader, you may think that I am more vehement in this matter than I need to be. But please remember that the cholera is now at our doors, and diphtheria has already left its blighting tracks in many a home. Another thing: Filth and indecency are one of the first steps toward immorality and crime. Cleanliness is next to godliness. Let us be *more* careful than we have been, and let us carefully watch our children, and train them in the ways of decency and order, while they may yet *be* trained.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

The outlook for high-pressure gardening at the present time is very favorable. Potatoes are high, and, in fact, almost all sorts of root crops are bringing good prices. Every thing in garden culture is promising a wider field than ever before; and the Spanish King onions are now readily bringing from three to four dollars a barrel. Yesterday a man came in to inquire about the price of seed, etc. He attended a farmers' institute two years ago, where I gave them a little talk on raising onions. He went home and drained a cat-swamp near his home, that had been an eyesore to himself and neigh-

bors ever since the country was settled. Then he made a rude cold-frame, according to my directions, and raised his own onion-plants. From half an acre of ground he raised 250 bushels of Prizetaker onions. The most of these have been sold at prices ranging from $1.10 to $1.25 per bushel. I purchased some of them myself yesterday, Jan. 24, paying him $1.10 at wholesale. I mention this to show that they are not so bad a keeper after all, when properly handled. He has kept them just below the freezing-point, or as near that as he could without injury. About $300 cash as the proceeds from half an acre of ground that had never been a particle of use to him heretofore! Who shall say that it does not pay to go to farmers' institutes? Of course, the neighbors laughed at him when he went to draining that swamp; and they made sly suggestions to each other, in his hearing, that onions would not be worth *any thing* after he had harvested his crop. When, however, these same neighbors paid him $1.25 a bushel for his great big nice solid onions, then it was *his* turn to laugh. There are a great many things about the different varieties that none of us know any thing about as yet. Here is a letter that strikes several of the points:

SOME QUERIES ABOUT EARLY ONIONS.

□*Mr. Root:*—I see by GLEANINGS, "Tomato Culture," and Greiner's work on onion culture, you are interested in growing onions from seed first planted in hot-beds. As I have a large trade in green bunch onions, I am led to believe the new method would be a valuable addition to my onion harvest. I have about seven acres of the Egyptian, or tree onion, from which I will sell this spring about thirty thousand dozen between April 1st and May 15th. Believing that I could commence pulling the seed onions soon after the last-named date, and thus continue to supply customers, I write to ask what variety you would use for green bunch onions. I shall want to plant 1½ acres to bunch while green, and one acre to remain until ripe.

I should also like to know whether I should have to use any onion-sets (planting them in open ground as early as will do), to fill up any gap that might occur between the last of winter onions and first of plants from seed onions; or will the latter make a merchantable bunch onion as soon as the sets? I have found none of the above questions answered in GLEANINGS or other works. If sets are to be used, what variety would be best—those grown from seed the year previous, or White Multiplier, or other variety?

The information given on high-pressure gardening alone is worth more than the price of your journal. C. W. POTTENGER.

Kankakee, Ill., Jan. 12.

[Friend P., I would use the White Victoria onion for your purpose, and I would start them in the greenhouse right now. Get them as large around as a leadpencil, or still larger, before you put them in the open ground. If you have sash enough, a few of them could be hurried along by putting them, say, two inches apart under sash. Onion-sets will, of course, give you onions earlier than seeds sown in the open air, but not as early, according to my experience, as large strong plants raised in hot-beds or in greenhouses; besides, onion-sets are so expensive that I am quite certain that onion-plants started in the greenhouse are going to take their place very largely. I suppose the White Victoria sets would be about the best for your purpose. I have had no experience with the White Multiplier or White Potato onions. Can some of our subscribers give friend P. and the rest of us some more points in regard to this question?]

RAISING LIMA BEANS UNDER GLASS.

Friend Root:—As you have a clayey soil, you no doubt have had the same trouble with lima beans that I used to have; so I will give you the benefit of my experience. After trying all the methods advanced by others to secure a perfect stand, I concluded trying planting in cold-frames and transplanting to patch. The first experiment was with sods cut into cubes 4x4x4 inches, with two beans placed on each sod, and covered with one and a half inches of pure sand. The experiment was so successful that the next season some "new features" were added. The frame is a permanent fixture for the bean-patch now. About the last week in April the seed is placed in four-inch pots; old fruit-cans that have been melted apart; oyster-pails, or almost any portable device by which they can be transferred to the patch.

Trouble? Think how your heart has sunk, as you have looked over your patch after a cold rain, and found, on breaking the crust, that half of the beans had rotted, and half of the other half had broken off getting through the ground. In the cold-frames you can get from one to two weeks' start in the spring; can laugh at a cold rain, or even quite a frost; prepare ground, plant field, stake, and commence cultivating, all the same day if you wish. Fussy? Try a few next season.

Many persons lose a great deal of the "deliciousness" of the lima bean by waiting too long before picking. The proper time to pick for cooking is when the pods are a nice yellow, just before they begin to shrivel. Gathered in this stage for winter they must be allowed to dry in the pod. J. K. MCCLURG.

Lima, O., Jan. 22.

TILE-DRAINAGE, ETC.

Friend Root:—In your high-pressure gardening notes in GLEANINGS of Nov. 15, you tell of Mr. Kraver's tile-drainage, all paid for with a second crop, in a single season. I should be glad to know more of that "highest hill in the county." How many acres? How many rods, and how deep are the tiles laid? How far apart are the drains? Did he employ an engineer?

I wish to tell you a bit of my own experience in tile-draining. In the fall of 1879, while my father was away on a visit, I bought $10.00 worth of three-inch tile, and spent time to the value of $10.00 in laying them in a small piece of ground containing 2⅝ acres. There were two ponds on this ground, making it so wet as to be almost valueless. When my father came home I told him I thought he ought to give me the entire first crop on this land in payment for the drainage. (He owned the land, and I was renting it of him at that time.) He agreed to my proposition. Well, I got 170 bushels of excellent corn from the 2⅝ acres, for which I received 60 cts. per bushel, making $102, from which take the $20.00 expense of tile and laying, and this left me $82.00 to pay for working the ground. I was somewhat of an enthusiast on the subject of tile-drainage before this; but afterward my enthusiasm knew no bounds, and still continues on the increase. About seven years ago I bought a good telescope level, and, besides doing my own leveling for drainage (I own a farm now), I have been assisting my neighbors in laying out systems of drains on their farms, having laid out over 88,000 feet this fall.

I have read with great interest W. I. Chamberlain's book, "Tile Drainage," and will read it again as soon as I get my corn husked.

LaSalle, Ill., Nov. 25. E. H. WHITAKER.

[The above was submitted to our neighbor Kraver, who replies as follows:]

Mr. Root:—I think I laid about 1000 2 and 3 inch tile on about one acre of ground, about 20 inches deep, and from one to two rods apart—no engineer employed. I planted part in early potatoes; and after digging them I cultivated the ground and sowed in purple-top White Globe turnips, and a part in cabbage and also turnips. I am satisfied that the second crop paid for the tile and work of laying them.

Windfall, O., Jan. 9. S. K. KRAVER.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
36 PAGES 7x10
$1.00 PER YEAR.

He brought me up also out of a horrible pit, out of the miry clay, and set my feet upon a rock, and established my goings. —PSALM 40: 2.

DON'T fail to read what Dr. Mason says, p. 94, about Ohio's honey exhibit at Chicago.

DR. MILLER says he has been president of the N. A. B. K. A. only one term, and not two or three as we stated. We must have been thinking of the Northwestern, for that is almost national in character.

HERE is another definition of "slumgum.' As it is a pretty good one, we give it here:

Tell Dr. Miller that the definition of "slumgum" is a kind of stubble that some people gather to make brick when they have no "straws."

Santa Barbara, Cal. DELOS WOOD.

On account of our temporary indisposition, as noticed elsewhere, we have been obliged to defer until our next the continued report of the North American at Washinton. In its place we are happy to give a very excellent condensed report, by W. Z. Hutchinson, of the meeting of the Ontario Bee-keepers' Association that assembled in Walkerton, Ont., Jan. 10—12.

OUR cold weather has been holding out remarkably. The mercury has been playing around zero, a good deal of the time below it, some of the time accompanied with high winds. Our bees are nicely packed *all* outdoors this year, for Mrs. Root said she must have our front cellar—the place where our indoor bees have been wintered of late. When winters are as cold as this one has been we don't mind having them in the cellar. Still, we do not fear losses from those outdoors.

THE following is a fair sample of the letters we are now receiving, and will explain the apparent apathy bee-keepers have with regard to joining the Union:

Dear Sir:—I fully expected to send a dollar and become a member of the Union; but when I read such astounding statements in last GLEANINGS, and from such men as they came from, I hesitated. How are part of the members going to fight the other part? "A house divided against itself can not stand." I am out until things look different.

Conroy, Ia., Jan. 11.

As this was a private letter, we omit the name. We do not wonder that bee-keepers should hesitate to join the Union when the President, James Heddon, practically sanctions the adulteration of honey with glucose.

ARE GLUCOSE MIXTURES WHOLESOME?

SHORTLY after tasting freely the glucose mixtures mentioned in another column, a peculiar kind of sickness came over us. We went home and stayed there two or three days, and haven't gotten over it yet. The doctor called it rheumatism as a result of a disordered stomach. While this temporary indisposition may not have been and probably was not the direct result of tasting the glucose, yet it had *something* to do with it. This morning, as we came before our office desk, there were the glucose honeys, just as we had left them. Whether it was imagination or not, the old feeling of nausea came back, and we turned our eyes to more agreeable subjects. And yet Mr. Heddon says that glucosing actually improves inferior honey! The vilest dark honey we ever saw was, in our estimation, better than glucose. We hope there is no one in our ranks who will be foolish enough to follow out Mr. Heddon's teachings — *teachings*, did we say? That is exactly what we mean. He tries to teach, so we interpret it, that adulteration is harmless to the consumer and beneficial to bee-keepers, because it helps to move off dark honeys, and that, therefore, instead of making any fuss when we hear of adulteration, we must wink at it and keep still. This is, in fact, his position boiled down in a nutshell. Does Mr. Heddon not see that this argument, if believed in by dishonest persons, would cause them to practice adulteration largely? In the first place, he is wrong in all his points. In the second place, we are *not* going to keep still and let this sort of glucose logic be rammed down the throats of any one if we can help it.

Later.—While Dr. Mason was here we gave him several of the glucosed samples to test. After tasting No. 2 (half glucose and half honey) he turned to us and said "I don't wonder that you were sick." The glucose, the pure article itself, he pronounced as good as any he had before tasted.

ANOTHER MICHIGAN BEE-KEEPER AS A LEGISLATOR.

OUR readers will remember that George E. Hilton was recently elected as a member of the State Legislature of Michigan. A letter which we have just received shows that he is not idle. It reads as follows:

Friend Root:—Yesterday we suspended the rules and passed a bill, to take immediate effect, appropriating an additional fifty thousand dollars to assist in making the exhibit at the World's Columbian Exposition. The agricultural departments are to have seventeen thousand of this, and bee-keepers expect one thousand in the subdivision, which will enable us to make a very creditable display. You will be glad to know that I have been assigned the chairmanship of the important committee, roads and bridges. GEO. E. HILTON.

Lansing, Mich., Jan. 13.

The following, also, from the House Records, shows that Mr. Hilton is determined to do something in the line of good roads:

Mr. Hilton gave notice that, at some future day, he would ask leave to introduce a bill to amend, revise, and consolidate the several laws of this State relative to the laying out, construction and maintenance, and improvements of highways, and to repeal all acts or parts of acts inconsistent therewith.

We have always known that Mr. Hilton was one of the bright and progressive men of that State; and when he champions the cause of good roads, we have additional assurance of it. One of the most crying needs all through our country is better roads; and in the majority of places the same money intelligently expended in accordance with the latest ideas would secure something far better than we now have. In the State of New York it has been shown that the money now spent is practically wasted; possibly this is true of Michigan. Referring to

the appropriation for the World's Fair we presume that Michigan bee-keepers are indebted to Mr. Hilton for a small slice of that amount. The State will be sure to make a creditable display.

ADULTERATED HONEY: A SIMPLE WAY OF DETECTING GLUCOSE IN HONEY.

In our last issue we gave a short clipping from the *American Bee Journal*, wherein Prof. Cook, following Mr. Heddon in convention, made the statement, that *if* glucose improved the sale of dark honeys, he had said his last word against adulteration; but we underscored the word "if," because there seemed to be a lingering doubt in his mind as to whether glucose would improve honey. Prof. Cook at one of the later sessions of the Michigan convention brought out some samples of honey into which had been put various amounts of glucose, and the same was then placed before a testing committee for their opinion. The following is the report, as we find it in the *American Bee Journal*, page 50:

Prof. Cook now brought forth the samples of glucose and honey mixed. A testing committee, consisting of Messrs. Bingham, Pearce, and Hunt proceeded to taste the samples. They reported as follows:

No. 1, very little honey flavor.
No. 2, some honey flavor.
Nos. 3 and 4, nearly all honey.

Prof. Cook then said that No. 1 was one part glucose and one of honey. No. 2, one part glucose and two of honey. No. 3, one part of glucose and three of honey. No. 4, pure honey.

This verifies what we said editorially on page 859, 1892, to the effect that we were morally certain that we could detect any addition of glucose to honey by the *taste*.

After we had written this much we concluded to put ourselves to the test. We accordingly instructed our apiarist to practice a little adulteration on a small scale. He prepared six samples. Four of the six contained various degrees of glucose. One was strictly pure honey, and another strictly pure glucose. Each sample was numbered, and a memorandum preserved, known only to the apiarist himself. Now for the results: While we could not determine the exact percentage of glucose in each sample, we did determine the relative amounts. For instance, No. 2 contained the most; No. 1 not so much; No. 3 a less amount still; No. 4 was pure honey, while No. 5 contained the least amount of the four. The jar of pure glucose could be told at sight. A comparison of our memorandum tallied exactly with that of our apiarist. These results were very nearly verified by A. I. R. and our proof-reader. When it is understood that the glucose above mentioned was the very clearest and best article that could be bought, of commerce, it will be seen that a slightly educated taste will be able to recognize almost unerringly samples of honey containing glucose. If these results be again verified by chemical analysis, the detection of adulterated samples would be certain. For the benefit of a few who would like to try the experiment, we may state that it is necessary to get a sample of the first quality of glucose. Taste it enough so that you can again thoroughly recognize its flavor, even when greatly reduced with good honey. Ask some friend to "doctor up" some samples, and then see how closely you can recognize them. As you taste the samples, hold a slight quantity of the suspected article on the tongue as long as possible. In thirty or forty seconds, if there is any glucose in the honey a sort of metallic, raw-potato, or starchy taste will make itself manifest. Before testing another sample, allow the mouth to become thoroughly cleansed of the remnant taste of glucose; then try another. If you do not succeed in locating each one pretty nearly right we shall greatly miss our surmise.

Now, what is the point to all this? Simply this: A glucose flavor is so marked and pronounced that an educated taste will easily recognize it, even in small quantities, in honey. If it can be so easily detected, it is going to make would-be glucose-mixers a little careful; and we hope it will prove a warning, not only to those who have been engaged in the business, but to those who contemplate doing so.

DEATH OF ORANGE JUDD.

Just about forty years ago, when I was a schoolboy, I got hold of a copy of the *American Agriculturist*, shortly after Orange Judd took hold of it. I remember that, even to my boyish ideas, I was somewhat prejudiced against it because it seemed extravagant. The offer of seeds, strawberry-plants, etc., however, with its plain, easy directions for cultivation, and its abundance of illustrations in regard to matters pertaining to outdoor farmlife, took a strong hold upon me; and later when it commenced its work of exposing humbugs and swindles, I became an enthusiastic admirer of O. Judd. In fact, I had already saved up some money to buy a wonderful recipe for silver-plating, when the *American Agriculturist* published the whole thing, and explained that it was simply to "wash" the articles over with the thinnest possible coat of silver, and that it was not silver-*plating* in any sense of the word; for Orange Judd had, among his other acquirements, considerable knowledge of chemistry, and knew what he was talking about. For many years I had nothing to do with farming, nor with any sort of outdoor life; but I still held on to the *American Agriculturist;* and winter and summer I laid my plans on what I would do when I was able to have a home of my own. This journal, so wisely advertised at just that time, did a work that no other publication in the world has ever done so well—that of giving everybody, tradesmen, mechanics, etc., a love for gardening as a recreation. In fact, there were few people 25 or 30 years ago who did not know more or less about the *American Agriculturist* and its editor, Orange Judd. As we go to press, the papers are full of accounts of the many benefits he has conferred upon our nation during his 40 or 50 years of an energetic and active business life that is almost without a parallel. It is said that he was one of the prime movers in introducing the International system of Sunday-school lessons. He also started the matter of State experiment stations, and by his energy pushed forward the work of establishing agricultural colleges for the different States. The *American Agriculturist* took the lead, or was almost the pioneer, in refusing to accept advertisements of a questionable nature, and positively declined to take any advertisement of any patent medicine. At one time—perhaps for the first time in our history as a nation—this government decided to give a private journal aid and encouragement in the matter of exposing swindlers, by cutting them off from the privilege of doing business through the mails. An account of his life, including his trials and disappointments, as well as his triumphs, by his surviving son, in the columns of the *Orange Judd Farmer*, of a recent date, is really touching. He was in very truth a friend to our nation, and a friend to humanity. May God grant that a recital of the stirring events of his useful life may have the effect of stimulating more of our American youth to go and do likewise. He was born in 1822, and died Dec. 27, 1892.

SPECIAL NOTICES.

MAPLE-SUGAR SUPPLIES.

The time is at hand when those who produce the delicious sweets from the sugar maple must be getting ready. For the best results you must have good clean apparatus of the most approved type, and you really can not afford not to read Prof. Cook's book, "Maple Sugar and the Sugar-bush," which we furnish at 35c, or we will give a copy free to all those who buy sugar-makers' supplies of us to the amount of $10.00 or more. We do not sell evaporators, but I think we can do you some good on spouts, pails, covers, and cans. We have ordered a carload of these for delivery Feb. 1st, and they are made of American tin-plate. The plates are tinned and made up into cans by the same firm; and by taking a carload we get them at bottom prices. See table below. The pails and cans are machine-made, far superior to hand-made, and guaranteed not to leak.

PRICE LIST OF PAILS, COVERS, SPILES, ETC.

Price per 100.....	IC tin.	IX tin.
10-quart bright tin buckets, per 100..	$15 00	$17 00
12 " " " " " ..	16 00	18 00
15 " " " " " ..	18 00	21 00

Patent hinged tin covers, per 100.....$6 00
Wood reversible covers, per 100.....$4 50
Record sap-spouts, per 100 ....$1 00; 1000 for $8 00
1-gal. sq. cans, " .. 11 00
1 " " " 6 in a box, per box.$ 90; 10 boxes.$ 8 50
1 " " "10 " " " .. 1 50; " " .. 14 00
5 " " " not boxed, each... 30; 100.. ... 26 00
5 " " " 2 in a box, per box. 75; 10 for.... 7 00
5 " " " 1 " " " ... 45; " " 4 20

NEW VEGETABLES WORTHY OF TRIAL FOR 1893;

LIVINGSTON'S NEW STONE TOMATO.

This was tested on our grounds last season; but owing to the extreme wetness of the weather at the time of setting them out, they were delayed later than usual; and, as a consequence, only a few of them were ripened; but there was the greatest number of large, smooth, handsome, green tomatoes on the vines, I think, I ever saw in my life. They seemed to stand the frost remarkably, also. Those under the foliage, many of them, ripened up nicely after some considerable freezes. There is another thing we have discovered: Tomatoes growing in an orchard, under trees containing considerable foliage, will stand frost a long while after others are gone. In thinking the matter over, we decided not to increase the number of tomatoes in our catalogue; but so many others have reported favorably, and expressed a desire to have seed of the Stone, that we have decided to put them in our list. Price—5c per packet; 25c per oz.; $3 per lb.

BUSH LIMA BEANS.

May be you had thought I had forgotten all about the Kumerle and my former enthusiasm. No, I have not. Last year, in spite of the wetness, some Kumerles on high ground, thoroughly underdrained, did so well that my courage has revived. Other seedsmen are coming to the same conclusion, and there is now a limited supply in the market, both of the Kumerles and Burpee's bush lima. Price of either, $8 per peck; $1.25 per quart; 75c per pint; 40c per ½ pint, to which must be added the usual amount of 8c per pint, or 15c per quart, for postage, if wanted by mail. My impression is, that the ground for these bush lima beans should be ridged up something as we do for sweet potatoes. If they are in a low spot, they are very apt to rot on the ground during wet weather; and, by the way, I think I shall always have a preference for lima beans hanging on poles. They ripen earlier, and mature more perfectly. Of course, the drawback is the expense and trouble of the poles. With bush limas you can plant ten acres if you like, providing you can get the seed; and if the season is a dry one, so that the pods mature, you ought to make a big thing of your investment, for they should be raised almost as easily as common white beans. All the bush limas have quite a fashion of lying flat on the ground—that is, they do in our rich market-garden soil.

MUSHROOM SPAWN.

Last, but not least, we for the first time offer mushroom spawn for sale. Ours is the best English Milltrack. Price per lb., 15 cts.; if wanted by mail, 25 cts. By express, with freight or other goods, 12½ cts. per lb. Directions for cultivation go with each package.

FOR SALE AN APIARY OF 100 STANDS

of bees in Simplicity and Dovetailed hives, on movable frames; all fixtures for both Comb and Extracted honey; drawn Combs; Honey-extractor; Wax-extractor; every thing complete, and the finest of Alfalfa ranges in Colorado. Also

150 ACRES OF LAND,

to be sold as one or in small tracts of 10 to 20 or 40 acre tracts for fruit-raising. A small fruit-farm is a paying investment here; the finest of fruit-land and alfalfa land, and beautiful climate on the western slope of Colorado.

Apply to *MRS. A. A. HODGDON, DELTA, DELTA CO., COLORADO.*

FOR SALE 250 COLONIES FINE ITALIAN BEES

IN DOVETAILED HIVES, $4.00 EACH.

Lots of 20 or more, special prices on application.

2tfdb *MRS. PAUL B. LEEDS, AVERY P. O., LA.*

Please mention this paper.

FOR SALE OR EXCHANGE.—Four colonies of Golden Italians, Foundation, Honey-racks, etc.
3-4-5d L. L. ESENHOWER, Reading, Pa.

AUTOMATIC COMB FOUNDATION MILLS. | **Made by W. C. PELHAM, Maysville, - Ky.**

Please mention GLEANINGS. 3-7db

WANTED.—To sell or exchange, 160-acre farm in Colorado, and country store building and ½ acre in Bary Co., Mich. *Let me hear from you.* Will take bees or any thing I can use. Address
J. L. COLE, Boyne, Charlevoix Co., Mich.

OTTUMWA BEE-HIVE FACTORY.

Bee-keepers, look to your interests. Every thing in the line of bee-supplies constantly on hand. Price list free. **GREGORY BROS. & SON,**
1-23o Ottumwa, Ia. South side.

Please mention this paper.

4 H. P. Engine 6 H. P. Boiler

For sale cheap if wanted at once.
D. S. HALL, South Cabot, Vt.

Queens From Best of Stock. By Doolittle's Method. **1893**
1tfd **J. B. CASE, Port Orange, Fla.**

HUNT'S FOUNDATION FACTORY.

Send for **Free Samples** of the **Finest Foundation** and **Sections** made. Special prices and advantages to dealers in Foundation. Send for my new illustrated **Free Price List** of every thing needed in the apiary. M. H. HUNT, Bell Branch, Mich.
2tfdb Please mention this paper.

I TELL you what, Jones, **Levering Bros.** sell the best goods and at the lowest price of any one I've struck yet. The largest and best equipped

Bee-Hive Factory

in the West. The Dovetailed Hive and New Hoffman self-spacing frame a specialty. Every thing used by practical bee-keepers at wholesale and retail. Send for their free Illustrated Price List, and save money. Supply Dealers, send for their Wholesale List. Address

LEVERING BROS.,
3-14db **Wiota, Cass Co., owa.**
Please mention this paper.

Bee and Chicken Ranch for Sale,

In Newhall, Southern California. 13 acres; 4-room house, barn, bee-house, 3 hen-houses, 63 stands bees. Extensive range; vines and fruit-trees, beautiful live oaks, etc. One-half mile to depot, stores, church, schools, etc. If you want a bargain, write at once for full particulars and reasons for selling.

A. M. Ward, Newhall, Cal.

BEE-HIVES AND SUPPLIES.

Send for catalogue free. Address **SAMUEL JONES,** Highland Park College, Des Moines, Iowa. 1-19db

---

FOR SALE. About 1700 lbs. of pecan nuts. Samples sent to any one making an offer. 24d
2-7db R. A. JANSEN, Wharton, Tex.

Read what J. I. PARENT, of CHARLTON, N. Y., says—"We cut with one of your Combined Machines last winter 50 chaff hives with 7-inch cap, 100 honey-racks, 500 broad frames, 2,000 honey-boxes, and a great deal of other work. This winter we have doubled the amount of bee-hives, etc., to make, and we expect to do it all with this saw. It will do all you say it will." Catalogue and Price List free. Address W. F. & JOHN BARNES, 545 Ruby St., Rockford, Ill.

When more convenient, orders for Barnes' Foot-Power Machinery may be sent to me. A. I. ROOT.
23tfd

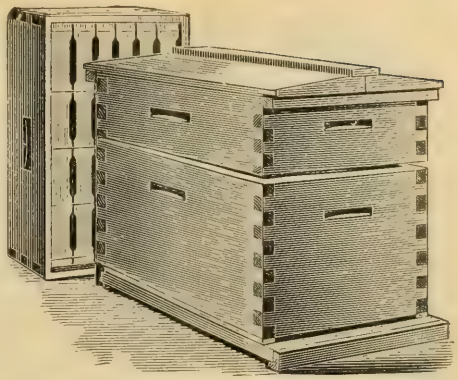
Bee-Hives.

Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue.

W. H. PUTNAM, River Falls, Pierce Co., Wis.

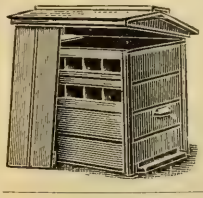
FOR SALE. Nineteen colonies brown bees, in movable-frame hives. Most of them hung on improved Hoffman frames. Contain now honey enough to pay for some. Will sell for $3.00 per colony, as they stand, if taken at once.

JOHN DAVIS, Garland City, Ark.



THE HIGGINSVILLE DOVETAILED HIVE.

NO MORE leaky covers. The above cover will shed water, and will not warp like the old-style flat cover. Send for our 24-page Catalogue of all kinds of Bee Supplies. Address **LEAHY MFG. CO.,**
3-4-5d **Higginsville, Mo.**
Mention this paper.



CHEAPEST HIVES OFFERED.

I offer special low prices on my CHAFF HIVE HIVE-PROTECTOR and DOVETAILED Hive, during February. Write for prices.

GEO. H. KIRKPATRICK, Union City, Ind.

CHAFF HIVES.

I offer special inducements to those who will sell my hives. Send for terms. **J. A. ROE, Union City, Ind.**

For Sale. One Given foundation-press, good as new; very cheap. Address
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Root's Goods AT ROOT'S PRICES can be had at Des Moines, Iowa. Address Jos. Nysewander.

SECTIONS.

$2.50 to $3.50 per M. Bee-Hives and Fixtures cheap. **NOVELTY CO.,**
6tfdb **Rock Falls, Illinois.**
Please mention this paper.

FALL Eggs and Plants, Fowls, Poultry-books and Papers; finely ill. circular free. Address GEER BROS., St. Marys, Mo.,
14tfdb Or, H. B. GEER, Nashville, Tenn.

FOR A KINDS OF BEE KEEPERS SUPPLIES. ADDRESS LEAHY MFG. CO. HIGGINSVILLE MO.

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DOVETAILED HIVES, SIMPLICITY HIVES,

SECTIONS, EXTRACTORS, ETC.
A FULL LINE OF
BEE-KEEPERS' SUPPLIES.
60-PAGE CATALOGUE. 1tfdb

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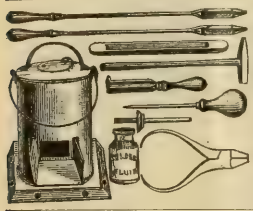
SAFE, DURABLE FENCE; ONLY $80 PER MILE.
LAND-OWNERS save one-half the cost avoid dangerous barbs
Agents make $200.00 per month and expenses **Cash**
The best local and traveling agents wanted everywhere. Write at once for circulars and choice territory; address A. G. Hulbert, Patentee, care of Hulbert Fence & Wire Co. Manufacturers. 204 OLIVE STREET, St. Louis, Mo.
Factory Catalogue with 200 engraved designs and prices, sent free to any who want fancy iron and wire work or city, cemetery and farm fences, etc.

In writing to advertisers please mention this paper. 21 20db



OATMAN'S SOLDERING AND REPAIR KIT

Consists of fire-pot, soldering-irons, solder, and soldering-fluid, with tools compl'te as shown in cut, with directions for soldering different metals, and how to keep your soldering-irons in shape. Whole kit, boxed, 12 lbs. Shipped on receipt of $2.00. Agents wanted.

O. & L. OATMAN, Medina, Ohio.
8-7db

"Quigley's Golden Queens"

are bred for business; try one. Circular of Queens and Bee Supplies ready Feb. 1st. Send for it, and a free sample copy of the

PROGRESSIVE BEE-KEEPER.

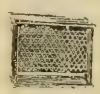
Address E. F. QUIGLEY, Unionville, Mo.
2tfdb

Please mention this paper.

300—FLORIDA
LEATHER-BACK ITALIAN QUEENS.

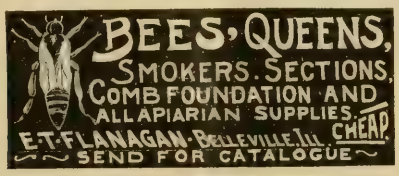
By my special method of harvesting a crop, in the "*migratory*" system, I shall have 300 *tested* queens for delivery about March 20th. $10 per dozen. *None are over 6 months old.* My crop the past season from one yard of 42 colonies, spring count, was 10,800 lbs., and increase to 150. A. F. BROWN,
1-6db HUNTINGTON, PUTNAM CO., FLA.

PATENT WIRED COMB FOUNDATION
HAS NO SAG IN BROOD-FRAMES.
THIN FLAT - BOTTOM FOUNDATION
Has No Fish-bone in Surplus Honey.



Being the cleanest is usually worked the quickest of any Foundation made.

J. VAN DEUSEN & SONS,
Sole Manufacturers, 5tfd
Sprout Brook, Montgomery Co., N. Y.
Please mention this paper.



TAKE NOTICE!

BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH,
14tfdb New London, Wis.
Please mention this paper.

BUFFALO, N. Y. Unsurpassed Honey Market.
BATTERSON & CO. Responsible, Reliable,
Commission Merchants. 18tfdb **and Prompt.**

SAVE MONEY.—Send to J. P. H. Brown, Augusta, Georgia, for his price list of supplies. Hives and foundation at wholesale rates. 4tfdb

NEW BOOKS,

AND OTHER BOOKS NOT FOUND IN CATALOGUE ON NEXT PAGE.

15 | How to Make the Garden Pay.** 1 35
By T. Greiner. This is a new book, just out, and it gives the most explicit and full directions for gardening under glass of any book in the world. Those who are interested in hot-beds, cold-frames, cold-greenhouses, hot-houses or glass structures of any kind for the growth of plants, can not afford to be without the book.

5 | The New Onion Culture* 30
This book is by T. Greiner, and it gives full particulars of the plan of planting onion seed in a greenhouse, hot-bed, or cold-frame, and planting the onions out in the field at the time we usually sow the seed. The author thinks that 2000 bushels of the large tropical onion can by this method be raised on an acre.

2 | The New Celery Culture 15
This summing-up of this new industry amounts to this: You fix your ground just as rich as you can possibly get it, with stable manure, chemical fertilizers, or any thing else that will do the business. Then put out your plants 7 inches apart each way, and give them water enough to make them boom right along from the word go. The idea is somewhat new; but enough succeeded in 189? to demonstrate that, like the new onion culture, it promises great possibilities.

2 | Rats: How to Rid Farms and Buildings of them, as well as other Pests of like Character 15
This little book ought to be worth dollars instead of the few cents it costs to any one who has ever been troubled with these pests, and who has not! It is written in such a happy vein that every member of the family will read it clear through, just about as soon as they get hold of it. It contains a complete summing up of the best information the world can furnish.

5 | Tile drainage, by W. I. Chamberlain 35
Just out. Fully illustrated, containing every thing of importance clear up to the present date.
The single chapter on digging ditches, with the illustrations given by Prof Chamberlain, should alone make the book worth what it costs, to every one who has occasion to lay ten rods or more of tile. There is as much science in digging as in doing almost any thing else; and by following the plan directed in this book, one man will often do as much as two men without this knowledge. The book embraces every thing connected with the subject, and was written by the author while he was enga ed in the work of digging the ditches and laying the tiles HIMSELF, for he has laid literally miles of tile on his own farm in Hudson, O.

| Handbook for Lumbermen 10

2 | Practical Turkey-raising 10
By Fanny Field. This is a 25-cent book which we offer for 10 cts.; postage, 2 cts.

4 | Peabody's Webster's Dictionary 10
Over 30,000 words and 250 illustrations.

1 | Silk and the Silkworm 10

A. I. ROOT, Medina, Ohio.

BEE KEEPERS SUPPLIES
BEST GOODS. LOW PRICES. LARGE STOCK.
LARGEST BEE SUPPLY HOUSE IN THE WEST.
ITALIAN QUEENS AND BEES A SPECIALTY.
CLOVER SEEDS BUCKWHEAT
SAMPLE OF OUR BEE JOURNAL THE WESTERN BEEKEEPER ALSO OUR CATALOGUE FREE!
JOS. NYSEWANDER. DES MOINES, IOWA.

FOR SALE AN APIARY OF 100 STANDS

of bees in Simplicity and Dovetailed hives, on movable frames; all fixtures for both Comb and Extracted honey; drawn Combs; Honey-extractor; Wax-extractor; every thing complete, and the finest of Alfalfa ranges in Colorado. Also

150 ACRES OF LAND,

to be sold as one or in small tracts of 10 to 20 or 40 acre tracts for fruit-raising. A small fruit-farm is a paying investment here; the finest of fruit-land and alfalfa land, and beautiful climate on the western slope of Colorado.

Apply to *MRS. A. A. HODGDON, DELTA, DELTA CO., COLORADO.*

BEES QUEENS
SMOKERS, SECTIONS, COMB FOUNDATION
And all Apiarian Supplies cheap. Send for Catalogue.
E. T. Flanagan, Belleville, Ill.

FOR SALE. About 1700 lbs. of pecan nuts. Samples sent to any one making an offer. 24d
12-7db R. A. JANSEN, Wharton, Tex.

FOR SALE 250 COLONIES FINE ITALIAN BEES
IN DOVETAILED HIVES, $4.00 EACH.
Lots of 20 or more, special prices on application.
2tfdb *MRS. PAUL B. LEEDS, AVERY P. O., LA.*

Climax BERRY CRATES and BASKETS. Indorsed by all leading berry growers as The BEST. Also Gift Packages, Grape, Peach and other Baskets. Prices low. Illus. Catalogue Free.
DISBROW MFG. CO., ROCHESTER, N.Y.
Please mention this paper. 4-9db

AUTOMATIC COMB FOUNDATION MILLS. | Made by W. C. PELHAM, Maysville, - Ky.
Please mention GLEANINGS. 3 7db

HUNT'S FOUNDATION FACTORY.
Send for **Free Samples** of the **Finest Foundation** and **Sections** made. Special prices and advantages to dealers in Foundation. Send for my new illustrated **Free Price List** of every thing needed in the apiary. M. H. HUNT, Bell Branch, Mich.
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Illustrated Home Journal 50 CENTS A YEAR
Interesting Monthly for
The Family and Fireside
Welcome in every Home.
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Large Premiums for Clubs.
Sample Copy sent Free.
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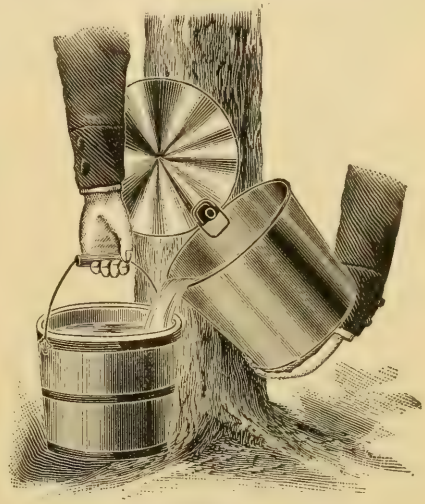
THOMAS G. NEWMAN,
147 South Western Ave.,
CHICAGO, - - ILLS.

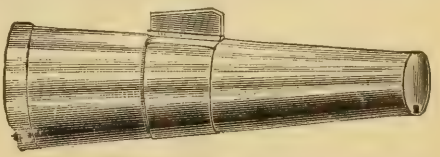
Maple-Sugar Supplies.

The time is at hand when those who produce the delicious sweets from the sugar maple must be getting ready. For the best results you must have good clean apparatus of the most approved type, and you really can not afford not to read Prof. Cook's book, "Maple Sugar and the Sugar-bush," which we furnish at 35c, or we will give a copy free to all those who buy sugar-makers' supplies of us to the amount of $10.00 or more. We do not sell evaporators, but I think we can do you some good on spouts, pails, covers, and cans. We have ordered a carload of these for delivery Feb. 1st, and they are made of American tin-plate. The plates are tinned and made up into cans by the same firm; and by taking a carload we get them at bottom prices. See table below. The pails and cans are machine-made, far superior to hand-made, and guaranteed not to leak.



BUCKET WITH HINGED TIN COVER.

This cut shows the manner of hanging the bucket on above the spout, and also the manner of emptying with the hinged tin cover. Most progressive sugar-makers nowadays use covers of some kind.



RECORD SAP-SPOUT.

This spout is cheaper than any other made, and we believe it is as good as any, if not better. It is used almost exclusively in this section.

PRICE LIST OF PAILS, COVERS, SPILES, ETC.

	Price per 100....	IC tin.	IX tin.
10-quart bright tin buckets, per 100..		$15 00	$17 00
12 " " " " " ..		16 00	18 00
15 " " " " " ..		18 00	21 00

Patent hinged tin covers, per 100.....	$6 00
Wood reversible covers, per 100.....	$4 50
Record sap-spouts, per 100	$1 00; 1000 for $8 00
1-gal. sq. cans, " ..	11 00
1 " " " 6 in a box, per box.	$ 90; 10 boxes. $ 8 50
1 " " "10 " " " ..	1 50; " " .. 14 00
5 " " " not boxed, each...	30; 100.. .. 26 00
5 " " " 2 in a box, per box.	75; 10 for.... 7 00
5 " " " 1 " " " ...	45; " " 4 20

A. I. ROOT, MEDINA, OHIO.

FOR SALE OR EXCHANGE.—Four colonies of Golden Italians, Foundation, Honey-racks, etc.
3-4-5d L. L. ESENHOWER, Reading, Pa.

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CIRCULARS RECEIVED.

The following parties have sent us catalogues of hives, apiarian supplies in general, bees, queens, etc. Free copies will be sent to applicants.

O. Moseley, Peru, Ind.
J. P. Moore, Morgan, Ky.
J. N. Colwick, Norse, Tex.
J. F. Michael, German, O.
F. H. Dunn, Yorkville, Ill.
E. Shimel, McCuneville, O.
Levering Bros., Wiota, Ia.
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J. W. Clark, Clarksburg, Mo.
W. H. Norton, Skowegan, Me.
Mrs. A. A. Simpson, Swarts, Pa.
P. Shepardson, Freeport, Wash.
W. S. Pouder, Indianapolis, Ind.
W. L. Maloon, West Bowdoin, Me.
J. F. Rosenfield, West Point, Neb.
Engh & McPherson, Lochiel, Wis.
Leininger Bros., Fort Jennings, O.
St. Joseph Apiary Co., St. Joseph, Mo.
I. J. Stringham, 92 Barclay St., New York.
Leahy Manufacturing Co., Higginsville, Mo.

CONVENTION NOTICES.

The Texas State Bee-keepers' Association will hold its 15th annual session at Greenville, on Wednesday and Thursday, April 5 and 6, one mile north of the court-house, at the apiary of Mrs. Jennie Atchley. All are invited. No hotel bills to pay.
A. H. JONES, Sec., Golden, Texas.

WANTED.—Every one to send for our approval sheets of fine stamps at 50% commission. Agents wanted in every town. S. H. BRAINARD, Box 361, Medina, Ohio.

WANTED.—To sell 35 hives with Italian bees; will sell very cheap. M. A. WILKINS, Seneca, Nemaha Co., Kansas.

Don't Forget to send for our 1893 circular. Dovetailed hives, Sections, Bee Supplies, etc. *J. NEBEL & SON,* HIGH HILL, MO. 2tfdb

SUPPLIES. Large illustrated catalogue free; or send 10c in stamps for *THE BUSY BEE,* a book telling how to manage them. WALTER S. POUDER, Indianapolis, Ind. 4-12db 175 E. Walnut Street.

Root's Goods for the West. Address Jos. Nysewander, Des Moines, Ia.

DEAR BEE-KEEPING FRIENDS:

I shall be glad to book your orders, for what queens you may wish, for early spring or summer delivery. Prices for untested, February, March, April, and May, $1.00 each; six, $5.00, or $9.00 per dozen; June and after, 75c each; $4.25 for 6; or $8.00 per dozen; 100 tested three-banded queens, $1.50 each, for early shipment. Prices for breeding-queens on application.

Remember, I breed both the three and five banded Italians at above prices. My queens give satisfaction, judging from the many testimonials, from nearly three thousand sold in 1892. Safe arrival and satisfaction guaranteed. Also Hives and Supplies low. 2tfdb

JENNIE ATCHLEY,
Greenville, Hunt Co., Texas.

☞In responding to this advertisement mention GLEANINGS.

Berries. Friends, I can furnish you with all kinds of berry-plants at about one-half the usual price. Plants warranted. Bank references. Satisfaction guaranteed. 6tfdb Address EZRA G. SMITH, Manchester, N. Y.

ITALIAN QUEENS. Tested, $1.50; 6 for $7.50. Sent after Mar. 1st. Untested, $1.00; 6, $5.00; or $9.00 per 12. Sent after April 1st. Safe arrival guaranteed. Send for circular of Bees, Queens, Drones, Root's Dovetailed Hives, Foundation, Extractors, etc. J. N. COLWICK, Norse, Bosque Co., Tex.

Job Lot of Sections, $1.50 per M. White V-groove, 4¼. Samples by mail, 10c. All supplies very cheap. Address 3tfdb Oliver Foster, Mt. Vernon, Linn Co., Ia.

In writing advertisers please mention this paper 2itfdb

DOVETAILED HIVES, SIMPLICITY HIVES,
SECTIONS, EXTRACTORS, ETC.
A FULL LINE OF
BEE-KEEPERS' SUPPLIES.
60-PAGE CATALOGUE. 1tfdb

J. M. JENKINS, WETUMPKA, ALABAMA.

☞In responding to this advertisement mention GLEANINGS.

HONEY COLUMN.

CITY MARKETS.

CINCINNATI.—*Honey.*—No change since our last. Demand slow from manufacturers; but there is a good demand for extracted honey for family use. It brings 6@8 on arrival. There is no good comb honey in our market. Prices are nominal at 14@16 in the jobbing way. *Beeswax.*—Demand is good, at 23@25 on arrival for good to best yellow.
CHAS. F. MUTH & SON,
Feb. 8. Cincinnati, O.

ALBANY.—*Honey.*—We never knew the honey-market to clean up as nicely as it has this season. We have been about out of stock a number of times when other small lots would arrive, just sufficient to supply the demand; at present we are entirely out of 1-lb. buckwheat. Prices remain unchanged on both comb and extracted.
CHAS. McCULLOCH & CO.,
Feb. 11. 393-397 Broadway, Albany, N. Y.

PORTLAND.—*Honey.*—The supply of both comb and extracted honey is only moderate, and demand for fancy 1-lb. comb is in excess of the supply. Dark grades are in fair supply. We quote:
Extra white, 1-lb., 16; white, 1-lb., 15; light amber, 1-lb., 13; dark, 1-lb., 11. Extracted, 6½@9, as to color.
LEVY, SPIEGL & CO.,
Jan. 27. Portland, Oregon.

KANSAS CITY.—*Honey.*—The demand for comb and extracted has been light, supply fair. We quote: Comb, 1-lb., No. 1 white, 16@17; No. 2 white, 14@15; No. 1 amber, 15@16; No. 2 amber, 10@12. Extracted, white, 7½@8; amber, 6@7. *Beeswax*, 22@25.
CLEMONS-MASON COM. CO.,
Feb. 9. Kansas City, Mo.

BUFFALO.—*Honey.*—Sales to-day are very moderate, little fancy moving at 16c; stray sales, 17; 2d grades of clover, mostly 12@14; buckwheat, dull, 8@9. *Beeswax*, 28@30 for first class; second, 23@25.
BATTERSON & CO.,
Feb. 8. 167, 169 Scott St., Buffalo, N. Y.

CLEVELAND.—*Honey.*—No. 1, 14c; No. 2, 12. *Beeswax*, 30; market on wax firmer.
WILLIAMS BROS.,
Feb. 8. 80 & 82 Broadway, Cleveland, O.

BOSTON.—*Honey.*—Honey is selling slow, and prices are lower. Best 1-lb. comb, 16@17. Extracted, 8@10. *Beeswax.*—None on hand.
BLAKE & RIPLEY,
Feb. 10. Boston, Mass.

KANSAS CITY.—*Honey.*—There is no change in the honey-market; stocks are fairly large with a good demand. White 1 lb., 16@17; No. 2, 15; dark, No. 1, 13@14; No. 2, 12; extracted, 7@8. *Beeswax*, none on hand.
HAMBLIN & BEARSS,
Feb. 11. 514 Walnut St., Kansas City, Mo.

CHICAGO.—*Honey.*—The demand for honey is fair considering the extreme cold weather. Fancy white brings 17@18; other grades of white, 16; dark, 13; extracted, steady at 6@9. The offerings are moderate in volume, but will likely increase when the weather moderates. *Beeswax*, 25.
R. A. BURNETT & CO.,
Feb. 8. 161 So. Water St., Chicago, Ill.

ST. LOUIS.—*Honey.*—Extracted, scarce, but demand light. *Beeswax*, prime, 26.
Feb. 9. D. G. TUTT GRO. CO.,
St. Louis, Mo.

DETROIT.—*Honey.*—Best white comb honey, 14@15; dark, 12@13; not much in stock. Extracted, 8@8½ for white; buckwheat and dark grades, 7@7½. *Beeswax*, 26@27.
M. H. HUNT,
Feb 9. Bell Branch, Mich.

5-BANDED
3-BANDED BEES.
Nucleus colonies. Circular free.
3-8db J. F. MICHAEL, German, Darke Co., O.

Wants or Exchange Department.

Notices will be inserted under this head at one-half our usual rates. All advertisements intended for this department must not exceed five lines, and you must SAY you want your adv't in this department, or we will not be responsible for errors. You can have the notice as many lines as you please; but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices offering articles for sale, can not be inserted under this head. For such our regular rates of 20 cts. a line will be charged, and they will be put with the regular advertisements. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange for any thing useful to a bee-keeper, one honey-extractor, good as new; 100 T crates in the flat; 40 queen-excluding honey-boards; 10 second-hand bee-hives, all-wood brood-frames, L. Simplicity size; 800 metal separators; 2 mandrels of different size: one 10-in. rip, one 10-in. cut-off saw; one 6-in. rip, one 6-in. cut-off; one 6-in. dovetailing saw. Address 514 ST. GEORGE'S ST.,
2-5db Ottawa, LaSalle Co., Ill.

WANTED.—To rent an apiary, or a position as an apiarist in California. Correspond with
CHAS. BROWN, Nicolaus, Sutter Co., Cal.

WANTED.—Position in an apiary by a young man. Five years' experience; good recommendations.
LLOYD SECHRIST,
3-4-5d Pleasant Home, Wayne Co., Ohio.

WANTED.—To exchange for offers, bees, queens, supplies; pure-bred poultry; eggs for hatching, etc. CHAS. H. THIES, Steeleville, Ill. 4tfdb

WANTED.—To exchange one well-trained setter dog for Italian bees, or offers; for particulars, address STEWART BROS, Sparta, White Co., Tenn.
4-5d

WANTED.—A second-hand Barnes foot-power saw in good repair. JAKE EVERMAN,
North Middletown, Ky.

WANTED.—Firearms of modern style, in exchange for English mastiff and Beagle hound pups. See ad. in present number. D. S. HALL, So. Cabot, Vt.

WANTED.—A young man with some experience in bee culture to work in apiary and fruit orchards. J. W. DAY, Crystal Springs, Miss. 4-5d

WANTED.—To exchange one Ithaca double-barrel shotgun, value $35.00, in Victor solid leather case, value $5.00; complete with loading-tools and brass shells, new, value $3.00; also one thoroughbred pointer pup, 3 months old, value $10.00, for 30-inch Safety bicycle in good order. Reference, Bank of Crab Orchard. W. L. MARSHALL,
4d Crab Orchard, Neb.

WANTED.—To exchange a full-blooded English female greyhound, color, dark seal brown, a perfect model, 1½ yrs. old; will exchange on a good cutter, brood sow, or offers. Who will speak first?
4d C. F. UHL, Millersburg, Holmes Co., Ohio.

WE have a good opening for a lady or gentleman to take part interest in greenhouse in a booming town in the natural gas belt of Indiana; 4000 pop. no opposition, good opportunity, free gas. Add. AM. HORTICULTURIST, Lawrence, Kansas.

WANTED.—To buy second-hand sawmill machinery. W. S. AMMON, Reading, Pa. 4-6-8d

ANOTHER 80 or 160 acres of swamp land in exchange for ½ cash and ½ bees in new Heddon or Dovetailed hives. A bargain. Address
O. H. TOWNSEND, Alamo, Mich.

A 4 H. P. engine in exchange for a dowel machine or offers. O. H. TOWNSEND, Alamo, Mich.

WANTED.—To exchange for clover comb honey, Zuccato's Papyrograph; 300 to 1000 impressions can be taken on dry unprepared paper from the original writing. J. B. ENOS, Connellsville, Pa.

WANTED.—To exchange a 4x5 photographic out fit, cost $30, for beeswax, L. worker combs honey, or supplies. A. HILLMANN,
4d 290 13th St., Brooklyn, N. Y.

It Costs Money

to advertise. A successful manufacturer and advertiser of toilet soap once said that it cost, in advertising, six times the price of a cake of soap, for each new customer secured; but it was a profitable transaction, as a person once a customer remained a customer. I have sometimes thought that the publisher of a good paper could almost afford to send it free one year to new subscribers for the sake of making people acquainted with his journal. I am not going to go as far as that, but I'll tell you how far I am going. Of some issues of the REVIEW I have as many as 300 copies; of others, 200; of others, 100; and so on down to less than a dozen. Now, if you will allow *me* to pick them out, I will sell these back numbers at two cents a copy. Send me any amount up to fifty cents, and I will send you half as many copies as you send me cents, and no two copies alike. Remember that back numbers of the REVIEW are somewhat different from the back numbers of some journals—that each number is, to a certain extent, a little book or pamphlet containing the views of leading bee-keepers upon some special topic. Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Michigan.

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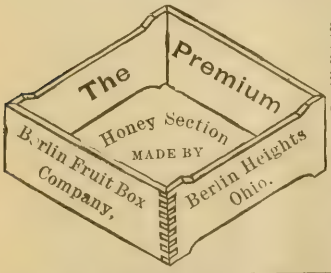

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ILLUSTRATED SEMI-MONTHLY
PUBLISHED BY A. I. ROOT MEDINA OHIO
$1.00 PER YEAR

Vol. XXI. FEB. 15, 1893. No. 4.

STRAY STRAWS

FROM DR. C. C. MILLER.

THANKS to many friends, for dictionary help.

"SLUMGUM," it seems, is not a new word. R. Wilkin writes that J. G. Corey used it 16 years ago.

IF WE ARE to have cholera and hoop-skirts both at a time the coming year, we shall indeed be an afflicted people.

"OUT-APIARY. An apiary kept out of doors." That's a definition I have seen given in all good faith, as a correct dictionary definition.

"SOUCHE" is what the French call the hive or colony that has sent out a swarm. We haven't any name for it, unless it be "mother-colony." Do we need any other?

IT WOULD COST a German bee-journal something in the way of revenue to join brother Root in his crusade against tobaccco, for tobacco "ads" are common in German bee-journals.

SIX BANANAS made Hutchinson's dinner on his way to Washington. That's just double the rations other slaves get. At least, I've read that three was the number in the West Indies.

PROF. COOK has been translated into German. His picture and biography are in *Illustrierte Bienenzeitung*. The editor considers him a favorite among American bee-keepers. Ganz wahr.

IN GERMANY, in some parts, bee-keepers are much interested in the planting of fruit-trees along the highways; and, if I am not mistaken, some public appropriations have been made for the purpose.

I'VE BEEN WONDERING who it was that handled the king's English so well in *C. B. J.* Hutchinson lets the cat out of the bag. It's G. T. Somers. I thought there was a *summery* air in the editorials.

THE COLD has been no greater—indeed, not so great—here as some other winters; but its staying qualities have been unusual. The thermometer has been steadily humble for an unusually long time.

HUTCHINSON THINKS that, so far as organization is concerned, "the Canadians are away ahead of us." Yes, and I don't know of any nation under the sun that isn't. We've mighty little "git up and git" in that direction.

R. WILKIN thinks we need a word indicating the contents of the hive, as distinguished from the hive or box containing them. He thinks Langstroth suggested the word *ruche*. If I am not mistaken, *ruche* is simply the French word for *hive*. Do we need such a word? and if so, what's the word? Will some German tell us if *bau* is used in that sense?

"DRY FÆCES" was a bone of contention in this country some years ago. Now they're having it in Germany, Weygandt asserting that any other than minute dry pellets of excrement is just so far evidence of disease, Dzierzon opposing.

HUTCHINSON, you just attend to Michigan and let Illinois alone. All the same, if the Illinois State Society would let the bee-journals publish its report free, and could spend that $500 in useful experiments, a lot more good might be done.

HASTY is to get up the review for the *Review*, taking all the journals, including the *Review*. The bee-journals will have to make unusual exertions to be dull if Hasty doesn't get something spicy out of them. The *Review* will be a review as *is* a review.

FIVE ESSENTIALS in the condition of a colony, to make the best of a harvest, are thus given by C. J. H. Gravenhorst: A queen without fault; proper combs; swarming at the proper time or not at all; not overcrowded with bees; and not having too much brood.

THAT SHORT WAY to kill skunks, on page 93, reminds me—I tried that way once within 15 miles of where Mr. Wertz lives. The only difference was, that I struck the tail instead of the head. "Smudge!" I can smell it yet! It was dark, and I thought it was a duck!

JUST AS I THOUGHT. Prof. Cook says, "I feel sure, not from guess but from careful investigation, that honey is always injured by adulteration with glucose. Such practice is ruinous to bee-keeping and, should be denounced and prevented, no matter what it costs."

GRAVENHORST thinks Frank Benton was incorrectly reported at Chicago in saying that European bee-keepers were behind the times, or else that he hadn't seen or learned much about it, during his sojourn in the Old World. They can surely give us points in some respects.

THAT GENIAL GERMAN, C. F. Muth, with his usual persistence, has succeeded, as reported in *A. B. J.*, in getting freight rates on extracted honey the same as on syrup, instead of 40 to 50 per cent higher, as heretofore. I don't know just how much territory is covered by this ruling.

RAMBLER, if you want one of those sweet creatures under my care, on page 90, why don't you walk up like a man, instead of sneaking round the corner? But one of the "sweet surups" has her eye on you through that hole in the wall; and if she once spears you with that nose you'll never complain of fleas again.

Queen-excluders, says Rambler, in *Review*, let queens through not only once in a while, but twice in a while. That's rather discouraging. I thought the last lot I got worked every time; but I'd give something to be certain. Suppose Gleanings gives reports of successes and failures with *virgin* queens, telling, if possible, the kind of perforations used.

The severe cold of this winter is being commented on by the editor of *B. B. J.*, it having actually gone as low as 5° above zero in one place! Bless your heart, Mr. Editor, come and spend a few days at Marengo, and you'll call 5 above mild. Why, it's been playing around zero for weeks, sometimes 20° below, and yet it has gone a good bit lower other winters.

The nameless disease is reported so differently in different cases that L. B. Smith, in *A. B. J.*, thinks there must be two separate diseases. I've had more or less of it for years, and don't think it of importance enough to make a fuss about; but it seems quite a different thing with others, Mr. Smith saying, "They just die by the wholesale—a strong colony dying out in a few days."

LANGSTROTH'S REMINISCENCES.

AN INTERESTING ACCOUNT OF THE CIRCUMSTANCES THAT LED TO THE INVENTION OF THE LANGSTROTH HIVE AND FRAME.

The principle of having the bees suspend each comb from a separate bar, by which Dzierzon accomplished such great practical results, had, indeed, been known before his time. In 1675 (see "A Journey into Greece," by Geo. Wheeler, page 411) the bee-keepers of Mount Hymettus used it in a rude form, in making artificial swarms; and in 1790 the Abbe Della Rocca shows in plate No. 3 of the third volume of his work on bees, that he used bars with "wings" similar to those used by the Baron von Berlepsch, to keep the combs at suitable distances apart. In the sixth volume of Hamet's bee-journal, *L'Apiculture*, p. 146, may also be found Della Rocca's description of his hives, made, as he said, "after the method of the ancient Greeks." On p. 147 of the same journal there is a cut and description of a hive with two tiers of movable slats, and with side-opening doors, invented by Buzairies. A description of this hive may be found in "Memoires de l'Académie de l'Industrie Française, de 1832;" but the inventor says that he made it known to the Society of Natural History in 1828 — some seven years before Dzierzon began to keep bees. These proofs that hives with slats, and even with side-opening doors, were used and described prior to Dzierzon's writings, are not given with any intention to detract from his merits, for there is not only no proof or even probability that he knew of them, but it is very certain that, until by his great skill he had made such hives a success, they had contributed scarcely any thing of value to practical apiculture.

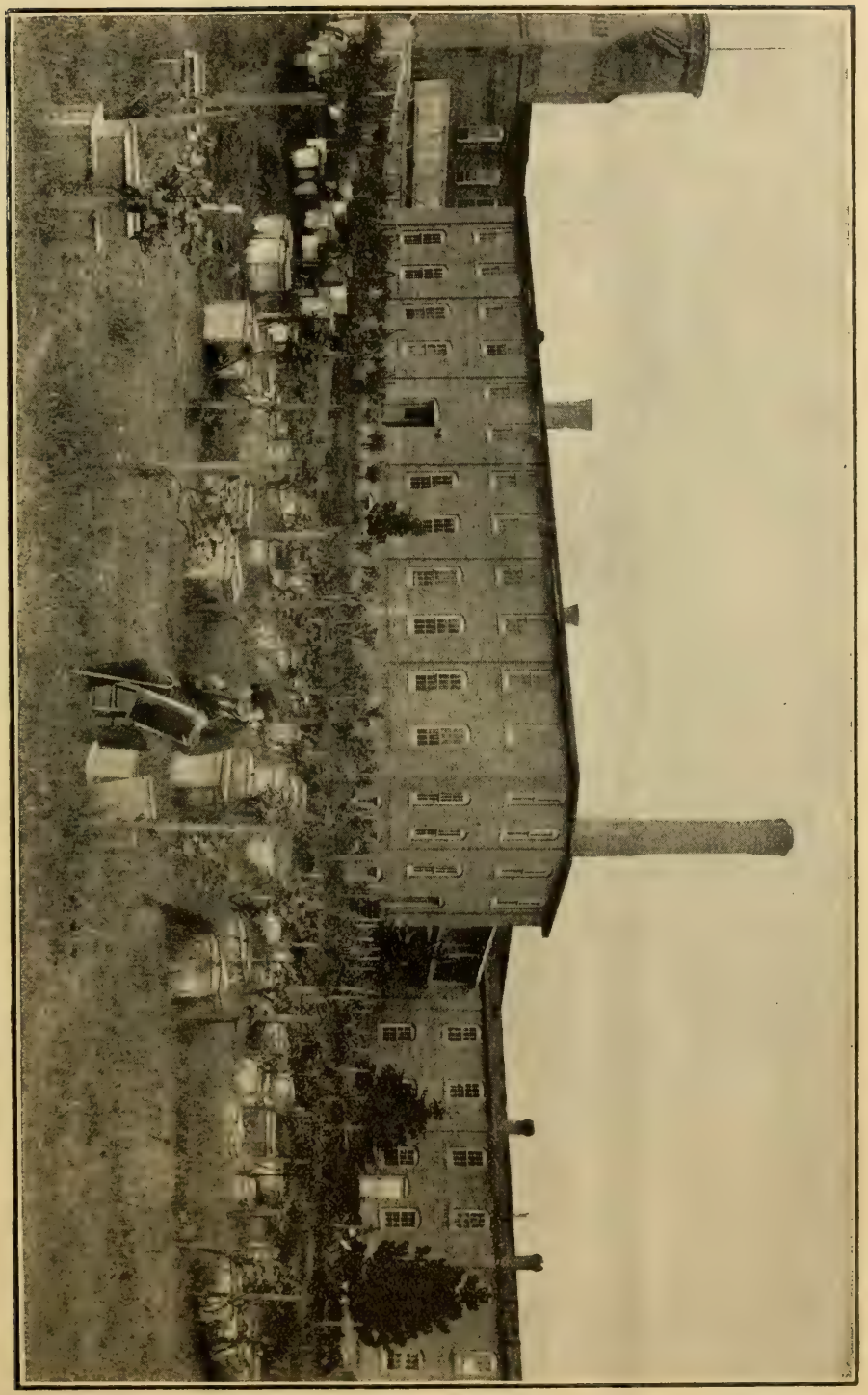
Having by the use of my improved bar-hive secured a more perfect control of the combs than I could find in any other hive, I began to see that artificial swarming might be made much more successful than by Huber's method; for about this time I discovered that bees without a queen, if they build comb at all, make it of drone size; a fact unknown to Huber, and fatal to any practical success in artificial increase by his methods.

The publication of my discovery, made in the summer of 1851, that bees could be trained to work in large observing hives, even when exposed to the full light of day, without obscuring the glass with propolis, brought me a visit from the late Rev. J. H. Berg, D.D., of Philadelphia. From him I first learned of the existence of such a person as Dzierzon, and of the great attention he had attracted by his successful management of bees. Before Dr. Berg communicated any particulars of Dzierzon's methods I showed him my hives, and explained my system of management. He found our hives to differ in some very important respects; but he was greatly astonished at the remarkable similarity in our methods of management, as my investigations had evidently been conducted without even the slightest knowledge of Dzierzon's labors. He informed me that Mr. Samuel Wagner, cashier of a bank at York, Pa., had made a translation of Dzierzon's work on bees, the loan of which he procured for me.

No words can express the absorbing interest with which I devoured this work. I recognized at once its author as the *Great Master* of modern apiculture. His discovery of parthenogenesis threw a flood of light upon the profound mysteries in the physiology of the honey-bee, which had so perplexed observers from the time of Aristotle, and which even Swammerdam, Réaumur, and Huber had failed to solve. I soon perceived that I had been anticipated in more than one important discovery, and that he was well acquainted with the fact, with all its practical results, that bees without a queen build only drone-combs. Artificial processes, which I had supposed to be all my own, and which I had practiced on a comparatively small scale, had been conducted by him so largely and so successfully as to secure special recognition by the king of Prussia, at whose request his book was written.

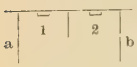
In the fall of 1851 I had nearly completed my application for a patent upon my improved bar hive. It will, no doubt, appear very strange to persons not familiar with the ordinary progress of inventions, that the shallow space between the tops of the bars and the board on which the receptacles for surplus honey rested, and which I proposed to make one of the leading features in my patent, did not at once suggest itself to me that uprights might be fastened to the bars, so as to give the same bee-space between the front and rear walls of the hive, and so change the slats into movable frames. But I used the shallow space above the bars, for a whole season, without ever connecting the two ideas; and then, only when it was too late to make any use of it in the apiary for that year, did the simple idea of the movable frames present itself to my mind. Returning late in the afternoon from the apiary, which I had established some two miles from my city home, and pondering, as I had so often done before, how I could get rid of the disagreeable necessity of cutting the attachments of the combs from the walls of the hives, and rejecting, for obvious reasons, the plan of uprights, close fitting (or nearly so) to these walls, the almost self-evident idea of using the same bee-space as in the shallow chamber came into my mind, and in a moment the suspended movable frames, kept at suitable distances from each other and the case containing them, came into being. Seeing by intuition, as it were, the end from the beginning, I could scarcely refrain from shouting out my "Eureka!" in the open streets.

At that time there was visiting me my college classmate and dear friend, the late Rev. E. D. Sanders, who afterward founded the Presbyterian Hospital in Philadelphia, and who had taken that season a lively interest in my apicultural experiments. Full of enthusiasm, we discussed, until a late hour, the results which both of us thought must come from using movable frames instead of bars. Before I sought my



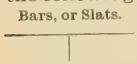
1852—LANGSTROTH AND THE EVOLUTION OF THE LANGSTROTH INVENTION.—1892—SEE PAGE 144.

bed, under date of October 30, 1851, I made this record in a private journal still in my possession:



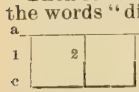
"If the slats are made so that *a* and *b* are about ⅜ inch from the sides of the hive, the whole comb may be taken out without at all disturbing it by cutting."

Before the above, but without date, occurs the following entry:



"In the use of barred hives, every thing will depend upon having the combs accurately fastened, each to its proper slat. When the slats are long, a small cross-piece extending half way down will answer quite a good purpose."

Then follows, under date of Oct. 30, 1851, after the words "disturbing it by cutting":



"If the apiarian has some clean worker comb, he should fasten it at (1, 2); if not, he should draw a thin line of wax across the center of the bar. If every other bar can be furnished with a comb-guide it will answer every practical purpose. *a b* should be an inch wide, ¼ in. thick; 1, 2, 3, *c d*, ¾ in. wide. If *a b* is not over 12 in. long, 2 may be dispensed with; *c d*, about ⅜ of an inch from the bottom-board. By the use of such a compound bar, the removal of bars with comb, brood, or honey can easily be effected. With the ordinary bar, the work of removal is always difficult and often impossible; and this is the reason why hives with bars, notwithstanding all their theoretical advantages, have been so little used. It is very obvious, that the box or boxes for the storage of surplus honey may be furnished with these bars." . . . "The use of this bar will, I am persuaded, give a new impetus to the easy and profitable management of bees, and render the making of artificial colonies an easy operation. By the very great ease with which the bars with their combs may be removed, a command over the whole proceedings of the bees is obtained which is truly wonderful. If a hive is infested with the larvæ of the bee-moth, all the combs may be examined and cleansed in a short time. To one unaccustomed to the scientific management of bees, it would appear to be a very formidable undertaking to remove a bar with its comb full of bees. The timid or inexperienced may use a bee-dress, or resort to a little smoke." . . . . . "The removing of the queen by means of these bars is very easily accomplished, and this and all other operations may be performed without injuring a single bee, thus preserving the apiary from constant irritation, and keeping the bees always peaceable. It is obvious, that the movable frames (I now call them by the better name) may be adapted to almost any hive, and that they will be of the greatest practical benefit."

It must be remembered, that, when I set down these remarks, I had never seen nor even heard of movable-comb frames for a bee-hive. However crudely expressed, they show at least that I was well prepared for the results which followed their invention. It is very obvious, that the idea of using movable frames could never have occurred to any one unless he had become fearless in the management of bees, by knowing to what a wonderful degree they can be made subject to human control.

Up to the time of my reading Mr. Wagner's manuscript translation of Dzierzon, I knew nothing of European bee culture save what I found in the works of Huber, Bevan, and Huish. I was satisfied that my hive and methods of management were far in advance of any thing given by these writers, and, even after learning how far they had been outstripped by Dzierzon, I still thought that my movable frame made a foundation for much greater results than he had reached. Making, therefore, the claims to embrace my newly invented movable frames, my application for a patent was filed in the Patent Office at Washington, on the 6th of January, 1852. The original specifications and claims of this patent, which, from some modifications of my claims, and the great press of business then before the office, was not issued until Oct. 5, 1852, are so exhaustive as to leave no room to question what I claimed to have invented.

Dayton, O. L. L. LANGSTROTH.

Continued.

SPRING MANAGEMENT OF BEES, ETC.

PLAIN DIRECTIONS FROM DOOLITTLE; SPREADING BROOD, ETC.

Several have written me, asking me to tell just how I manage bees in the spring; and as most of them speak of taking GLEANINGS, I will reply through its columns, with the permission of the editor. As I now feel in the matter, there is only one thing which is really essential to look after, as soon as the bees are set from the cellar, or in early spring, no matter which way the bees have been wintered; and that is, to see that they have plenty of honey to last them till pollen becomes plentiful. This can best be done on any cool morning by raising the cover to the hive and turning back the quilt, or whatever covers the combs, doing this carefully, so as not to arouse the bees. If plenty of sealed honey is seen along the top-bars of the frames, the bees are all safe; and if otherwise, they are not safe, and should be fed enough to last four or five weeks, always remembering that bees consume more honey at this time than they do during the fall and winter months. Having made sure that all have honey enough, there is no further need of molesting the bees till the weather becomes warm enough for them to work in the fields or trees, gathering pollen; in fact, I now believe that further disturbance is positively detrimental, inasmuch as it often causes the loss of bees and brood, as well as a greater consumption of honey, without any proportionate gain to the colony. Six weeks is a sufficient time to build up a fair colony, to one sufficiently strong to store honey to the best advantage; and as the clover does not usually begin to yield honey here till about the twentieth of June, from May first to the tenth is soon enough to begin working for brood: and it is better not to touch them, even now, unless the weather is warm enough so that the mercury reaches from 60 to 75° during the middle of the day. With a temperature of less than 60°, brood is liable to be chilled in handling, from which a positive loss is made, rather than the intended gain. If the weather is fine about this time, the internal condition of each colony is inspected by taking the frames out of the hives, cleaning the dead bees off the bottom-board, should any remain in the corners of the hives; seeing that each colony has a good queen, and that there is honey enough in each hive to last at least two weeks. A good queen is of no more importance at this time than is this two or three weeks of honey, which means from six to ten pounds; for if the bees do not have enough stores so they need not feel it necessary to economize, a good queen and all else will not make up the lack, for bees will not rear much brood if they are obliged to economize for fear of starvation in the immediate future. After seeing that all have a good queen and sufficient stores, they are now left till willow and hard maple bloom, when, if the

weather is favorable, the combs in the brood-nest are reversed by putting those frames having the least brood in them in the center of the cluster, and those having the most at the outside, thus causing the queen to fill these center combs with eggs as fully as were those which were in the center before, or more so, while the brood in those now on the outside is not allowed to decrease at all. In this way a great gain is made, as I have proven by leaving rows of hives in the apiary untouched, and by treating others as here given. Understand, I am talking of the frames which have brood in them, or what is termed the "*brood-nest*," and not the brood-chamber. Only the frames having brood in them are reversed; the rest are left untouched. In about two weeks the brood-nest is reversed again, at which time all but the very weakest colonies will have brood in all, or all but one or two combs, after which there is no gain made in handling the frames, unless you have some special object in view, such as taking away the queen, changing brood from a stronger to a weaker colony, or something of that sort. In two or three days after the last reversing was done, the colonies are ready for the sections, if there is any honey coming in. If not, it is better to wait till the hive becomes a little more populous; yet if we wait too long the colony is apt to contract the swarming fever before they go to work in the sections, in which case our prospect of a large yield of honey is lessened. As a rule, the fewer swarms that issue, the greater the yield of honey; yet where bees get the swarming fever, as they often will in spite of all our precautions, better results *will then* be obtained to let them have their own way, using the Heddon plan of preventing after-swarms, or some other equally good plan, than to try to keep these "fractious" bees all in the old hive.

NON-SWARMING BY TIERING UP FOR EXTRACTED HONEY.

In a late number of the *Review* I spoke of working my out-apiary on the tiering-up plan for extracted honey, so as to prevent swarming, or reduce swarming to such an extent that it would not pay to keep a man there to look after swarms. A correspondent, reading the same, wishes me to tell in GLEANINGS how it is done, as he has friends who take GLEANINGS, but not the *Review*. Before doing this I wish to ask you, Mr. Editor, not to let Dr. Miller call me *bad* Doolittle again, as he did in a late Stray Straw, because I had not told him that I had an out-apiary for the last three years. I have no time to hunt it up; but I am sure that I have twice mentioned the fact in print, before so stating in the *Review*, for I had no desire to keep the thing a secret. But, to return: The out-apiary is managed in the same way as given above until the time arrives for putting on sections, when, instead of putting on sections, a second story, filled with *all worker comb*, is put on in place of sections. If more room is needed (which there generally will be where the honey is all left on to the end of the season, as I recommended in the *Review*), as soon as signs of this are recognized, put a queen-excluder on top of the second story and a third story on top of this. Drone comb, or any thing along the line of comb, can be used in this, as the queen does not have access to it. If the honey season continues, and it is needed, put on the fourth, fifth, or sixth story, not extracting till the season is over, when all is to be extracted which the bees do not need for winter. The point is, to give so much room to the queen in the two lower stories that the bees will not want to swarm. If the excluder is placed on top of the first story, the bees are kept from swarming but little more than when working for section honey. G. M. DOOLITTLE.

Bordino, N. Y., Jan. 26.

[This plan of tiering up for extracted honey is practiced by others; and, if we remember correctly, by the Dadants. Where there are plenty of combs and upper stories or supers, it is the most economical of labor, and what is of equal importance the honey is the richest and finest, because a large part of it has been kept over the hive for a prolonged time, thus being thoroughly ripened.]

FROM PH. J. BALDENSPERGER.

A REVIEW OF BACK NUMBERS OF GLEANINGS. HOW BALDENSPERGER MAKES USE OF CAMELS.

In your issue for Jan. 1, 1892, you speak of the Stanley extractor. I may say that I too tried it one season. In addition to its being very expensive, it is too large to go through ordinary doors. In Palestine, as we used migratory bee-keeping we used them almost all the year round, out of doors; but when crated, so as to avoid the many knocks the can would have to go through in loading and unloading daily on and off the camels, they work nicely. I fixed the chains and reversible parts, and extracted some 10,000 lbs. in the course of the year with one extractor. The Arabs are not good hands at the crank, so I dispensed with that, and they work it by the simple handle. I should prefer, judging from the looks on p. 51, 1892, the Cowan rapid reversible, and I'll use one of that kind. We took 1350 lbs. of orange-blossom honey in one day with a Stanley extractor. One man turned the extractor and frames, while another man did the uncapping, another carried the full and empty combs to and from the apiary, and your humble servant took out the comb from the hives, sometimes taking 26 combs out of one hive. We never spare the brood comb, and lose very few bees; for if the whole frame contains uncapped brood the frames are left in the hive, all others passing through our hands. The above amount was taken from 40 hives, Apr. 9, 1892, averaging nearly 34 lbs. per hive. The same hives had been extracted Apr. 2, and averaged 29 lbs.

PUNICS.

Punic bees did not act with me as described on page 162 by "Hallamshire Bee-keeper." In Palestine they were less dangerous than Palestines; but having only a few, I handled them with the utmost care. At all events, they are not so ready to sting as Palestines, though just as irritable. The pure North Africans, for that is the right name, such as I saw in their North-African homes, acted differently. Perhaps their general management, which is quite different from mine, influences their disposition, for they used to attack us as soon as we approached the apiary which my brothers had there several years. Palestines, and Syrians or Cyprians, never do so, and I hope the North Africans may prove the same with kind handling. The sting is, in my flesh, just as painful as that of the Syrians or Easterns; and this lot I handled was just as cross-tempered as bees can be. I could work with Palestines, when not venturing to look through more than two hives in September or October, without a veil. With no honey coming in, robbers make necessary greater precaution; but these North Africans began stinging us the very first moment we set to work; and unless smoked continually they would simply be unendurable. Now, one thing may excite their anger; viz.: While in treeless Palestine we have hardly any traces of propolis to stick

the frames fast, and thus render the removal of frames irritating to the bees, the North Africans fill up every crevice with propolis, which is gathered by them profusely on the cork-oaks and pistachio trees or shrubs, with which North Africa is covered from one end to the other—from Marocco to Tunis. The Syrians, also, propolize a good deal. They have pine-trees all over Lebanon. I brought thirty colonies of those North Africans with me; but, nailing the doors alone, I could not do without protection. Then, again, they are the greatest robbers, in consequence of their better development of the sense of smell, than other bees, I suppose; but they are never molested by other races — at least, I had some sad experience with their robbing qualities. My Palestines and Cyprians (nuclei, of course), too weak to defend themselves, were robbed of their honey, their bees killed, and the hives left empty; and although they did attempt to attack some stronger colonies, they were repulsed; but never did I find a Palestine or Cyprian loitering about the North Africans. I came away with the Africans, some having not a single frame of brood, and arrived here in Nice Oct. 18th. They were fed up with honey in the evening. Continuing this for a few weeks they hatched some drones, and some colonies had as many as six frames of brood. They found a hive with four frames yesterday. The Palestines and Cyprians gave up brood-rearing, being placed on the same footing. I was very angry with the Africans for causing the death of several Palestines; but I hope they will pay for their impudence by yielding surplus honey, though in Palestine they gave about the same quantity, being placed in the most favorable condition.

AMOUNT OF HONEY CONSUMED IN APRIL AND IN DECEMBER.

On page 183 Dr. Miller says bees consume six times as much honey in April as in December. The following will show exactly what a hive of bees did during the year. It brought in 200 lbs. of honey; of this, 144 lbs. was extracted, and 56, consequently, was eaten and used up for breeding. March 21st it weighed 66 lbs.—bees, hive, and 26 combs; gathered, during orange-flow, up to April 7, 72 lbs., but evaporated 24 lbs.; thus, April 7th, 31 lbs. was extracted. It continued from April 8th till April 21st on orange-bloom, and gathered 79½ lbs., but evaporated 31½ lbs. Apr. 21st; 41½ lbs. was extracted from Apr. 21st to May 27th. The bees ate 14½ lbs., besides what little honey they gathered. From May 27th to June 18th the weight increased 29 lbs. of hemp honey, which was extracted June 18th. July 5th, weight increased 35½ lbs. of hemp honey, and again extracted July 5th. July 30th the weight increased 40 lbs. of thyme honey. The hive now stood at 115 lbs. The following table will illustrate the matter further:

July 30 to August 9, decreased 13 lbs. in 10 days.
August 10, decreased 2 lbs. in 1 day.
August 11, decreased 2 lbs. in 1 day.
August 12 to 13, decreased 2 lbs. in 2 days.
August 13 to 20, stationary—lost nothing in 7 days.
August 20 to 25, decreased 1 lb. in 5 days.
August 25 to 29, stationary again—lost nothing.
August 29 to September 2, lost 1 lb. in 4 days.
September 2 to 6, decreased 2 lbs. in 4 days.
September 6 to 13, decreased 1 lb. in 7 days.
September 13 to 24, decreased 3 lbs. in 11 days.
September 24 to 26, stationary again.
September 26 to 30, lost 1 lb. in 4 days.
September 30 to October 6, stationary again.
October 6 to 16, decreased 3 lbs. in 10 days.
October 16 to February 9, lost 10½ lbs. in. 116 days.
February 9 to March 16, lost 3 lbs. in 35 days.
March 16, decreased ½ lb.

March 16th, orange-blossom began again.

I was absent from Oct. 16, 1890, to Feb. 9, 1891, so I made no daily observations.

THE COST OF HONEY.

The cost of honey is discussed; but on p. 230 Mr. E. France talks about extracted honey, and he very justly remarks that it depends on location, bees, and the apiarist. In Palestine I worked the bees very differently from what any bee-keeper in the United States, perhaps, would do. As I owned no land I had to hire a place to put the bees during the winter; and during the different flows in summer the bees were hauled on camelback from one place to another. The usual pay for a camel carrying 8 hives is from 50 cts. to $1.00. The apiary of 100 hives is located in only one place during the orange-blossom flow. One keeper is sufficient; but during the dry summer months not more than 24 hives are placed in one apiary, thus requiring a keeper each. Again, the apiaries being located near honey-plants, water is generally lacking, and has to be hauled. A keeper is paid from $6.00 to $8.00 a month; the workmen, for extracting, carrying honey, etc., are paid from 25 to 40 cts. a day, according to their ability. Thus I find for 100 hives:

Food for bees	$ 48.00
Location	35.60
Tinkering	10.00
Bee-papers	5.00
Postage	2.50
Keepers and workers	75.60
Carriage for bees and implements	26.75
" for myself	20.30
Water for bees	6.00
Repairing	4.70
Duty on bees	30.00
100 days' work	150.00
	$414.45

I got 12,000 lbs. of honey, which was sold at 8 cts., on an average. But even this does not exactly give us the cost per pound for the capital invested yearly. Mortification, and such items, may be viewed very differently, thus leaving the calculation open to everybody to choose according to his own views.

SHOULD BEES BE ALLOWED TO MAKE WAX?

June 1, p. 415, G. de Layens' experiments are given, and Mr. de Layens gives his experience, following which we might suppose it to be a fact that bees really give us more, or at least as much honey, if they have only starters to begin upon, as when they have old drawn-out combs. Now, the results of my experiments with hundreds of hives are as follows:

1. That a hive having 26 combs built, and ready to be filled when the honey-flow begins, has always proved the best, the honey being at once stored away, and which, as soon as full, those young bees having a surplus secretion of wax to use up can busy themselves in filling up the corners and uneven places which are always found on all extracted-honey combs; for the uncapping-knife occasionally slips too low, thus breaking out a bit of comb, and so leaving plenty of chances for the bees to mend.

2. That a colony given a super full of foundation will go to work slowly; and, even if it has stored honey in most of the frames, these new combs are so fragile when handled that it is very dangerous to extract the honey out of them, thus giving a good deal less honey; for the same colony would almost fill the combs again in the same time that the foundation, newly built, is left in the hive.

3. A colony will surely build its own comb foundation out quicker, provided there are not too many frames given at a time, and provided they are always put in between two fully built old combs.

4. Again, a colony will build too much drone comb if only starters are given; and the drone comb will be filled out with eggs as fast as bees

advance in cell-building. From all I know, if the experiments were taken strictly, as Mr. de Layens says, it would be unwise not to let our bees build all their comb afresh every year. If all our colonies would remain quiet, or even if the swarms that issue as early as April would not greatly lower the average, the general average would always be a good deal higher from colonies on old-built combs than those colonies which are generally helped with several brood-combs, some empty, built out combs, and some foundation; for, while the old hive bees can work right away, the bees of the first swarm, it is true, have the advantage of having the laying mother, while the parent swarm loses some time waiting for the new queen to mate. But suppose the bees swarm out again; then, of course, the parent colony, having lost a great deal during the first period of its queen's virginity, how much more during the second!

REMOVING PROPOLIS.

I jotted down in my note-book the way in which Miss Emma Wilson gets propolis off her hives, separators, etc., on page 419, to test it as soon as I needed it. On p. 428 the junior editor, in addition to the above, tells us to rub grease over the contact part of brood-frames to prevent the depositing of propolis. Now, Mr. Editor, do you really advise greasing all contact parts of frames? and why brood-frames only? Do you intend to say by that, that the brood-frames are more propolized than others? or is it because they are (with Northerners perhaps) left untouched most of the time? With us, in Palestine, we made no distinction, but extracted honey from every frame, no matter whether it had brood in it or not, excepting open (unsealed) brood, and there are never more than two or three such combs in a brood-nest. Advanced brood is not very much injured by passing through the extractor. If the larvæ are moved a little outward by reversing, they are put right again; but what about the others on the second side? Well, I think the damage is not sufficient to warrant us in leaving the honey; then while we are taking out the full honey-combs, occasionally one brood frame slips along with the others.

DRONES CONGREGATING.

On p. 452, Mr. E. France, talking about drones congregating, agrees with Mr. Doolittle that drones do congregate; but although I have watched them occasionally as they congregated in Palestine, I always found them only half a mile from the apiary, making a great noise. It is generally in the afternoon, from one to four o'clock, that they fly out, the forenoon being too hot for them. May 14, 1890, and several days following; May 17, 1891, and following days; and Apr. 15, 1892, and following days, I saw the drones congregating, none out of sight, the young queens rushing up and down, followed by about two dozen drones, forming serpentine and whirling figures as swift as possible, passing out of sight, and this not more than thirty paces from the apiary. June 1, 1892, a queen and two or three drones dropped down not ten paces from an Arab apiary; but as there were a good many weeds in the place I could not find them. From all these observations, I think that drones congregate also immediately in or around the apiary, provided a good place, comfortably warm and without any wind, is found near by, behind a mountain or above some low lands. PH. J. BALDENSPERGER.

Nice, France, Dec. 9, 1892.

[This is another of Mr. Baldensperger's carefully written articles, and we are sure it will be read with interest. These articles are particularly valuable because the data are not taken from memory, but from the ever reliable note-book. The same painstaking care in collecting and preserving data always gives the exact page when referring to previous communications. We wish our correspondents would kindly remember this, as it saves much trouble. A quotation from memory of something said a few months back by some correspondent is apt to be unreliable, and is sometimes exasperating.

Referring to Mr. Baldensperger's inquiry in regard to greasing the contact parts of brood-frames, we would say that, by *brood*-frames, we meant all frames that *may* be used for brooding purposes, whether used for extracting or not. It is our custom in this country to call *all* frames not used for holding sections (such as "wide frames," "section-holders," etc.), brood-frames. So far as the propolis is concerned, there should be no difference whatever between the amount deposited on frames used in the brood-chamber or those in the extracting-supers. We do not recommend — or, at least, we did not intend to—that all who use self-spacing frames should rub the contact edges over with grease. We simply desired to suggest the trial of the plan. Reports since, however, regarding the value of the grease for the purpose are conflicting. We still urge further experiment in various localities on a few hives.]

RAMBLE 78.

ON THE ROAD TO CAMPO; THE CONFLICT BETWEEN BEE AND FRUIT MEN IN CALIFORNIA; A CHANCE FOR THE BEE-KEEPERS' UNION.

The scheme Mr. Hansen had in view when I met him in San Diego, and which elicited my hearty co-operation, was an extended camping-trip into the mountains toward the Colorado Desert. The preparations for the journey consisted in getting a few necessities of life in the line of sugar, salt, etc.; a double-barreled gun, and a stove upon which to cook our game. Our stove was not very cumbersome. It was made from a square five-gallon oil-can. We cut out one end and a portion of the other, and then cut a round griddle hole in the top, and it is done. It makes a fine camping-stove, and many of them are used in California. A comfortable tent was also supplied; some bedding, a bale of hay, and a bag of barley.

Mr. H. has one bay horse—large, fat, and lazy, and bearing the name of Kimball. Give him a cut with the whip and he will look around to see if it is meant; and it requires two or three more cuts to make him realize that he must move. Kimball was a power, though, when he got into motion. Our load, however, was too much for one horse, and a companion was hunted up. There are many horses in National City, but Mr. H. hunted a long time to find one just a little slower than his own, and succeeded in finding a white horse bearing the short but expressive title of Bob.

Having the two horses, we next secured the loan of a two-horse wagon; and here I found that my friend possessed another peculiar hobby. It seemed to be his delight to borrow some old ramshackle vehicle of his neighbors, and to nicely repair it for the use of it. People were therefore all anxious to lend to him, and he has a great reputation of being a handy man in the neighborhood.

Of course, our wagon had to be repaired, and the Rambler was requested to fix the brake. When this vexatious job was finished, then the box needed repairs; then a strap nailed on, and nuts replaced. My patience became nearly exhausted, and I remarked that we'd better go

out into the woods with an ax and make a new wagon. I used considerable more sarcasm, and was just getting warmed up to the theme when he suddenly straightened up from another repairing job he had on the harness, and shouted, "Well, who's a-kicking?"

I felt extremely ugly, and was about to retort sharply when I happened to think of my grandsire's oft-repeated admonition to count a hundred before giving a quarrelsome answer. Instead of counting I relieved my pocket of my Waterbury watch and commenced to wind. The effect was magical. The angry opponent at first looked interested. As the interesting process proceeded he looked anxious, and finally a broad grin spread o'er the face of both opponents, and peace reigned. The Waterbury is, therefore, not only a good timekeeper but a great peacemaker.

There are times, however, when this winding can be overdone; and the Rambler once made the fatal mistake of winding the Waterbury in church. The minister, I believe, had just entered his fifthly on the equatorial regions, and was craving another minute to elucidate a point. I happened to think that my watch had not been wound since the day previous, and that I must wind it. I slyly put my fingers into my watch-pocket and commenced the process. I thought no one would notice it; but that tell-tale click, long drawn out, excited the curiosity of the occupants of three seats fore and aft, and, at the completion of the job, I looked around and was "consternated" to find a dozen people staring, and plainly saying with their eyes, "Jehoshaphat! what kind of an internal rigging has that fellow got, any way?" *Moral.*—Never wind a Waterbury in church. It may not be sinful, but it is highly distracting.

Begging pardon for the above digression, I would resume by stating that we finally came to the starting-point, and found that Kimball would start under the lash, but Bob had to be helped along with the lever. The lever was not used as a cudgel, by any means, but as a gentle persuader, and both horses caught on to it immediately. Queen, the spaniel, had a place of honor on the seat with us, and our first day's drive was ten miles, to Cockatoo Grove. Here we found water, and camped. How sweetly we slumbered under our canvas roof! When I left San Diego, a severe cold had taken possession of me, and I thought myself in a bad condition to make a camping-trip; but tent life and an

RAMBLER'S CAMPING OUTFIT.

abundance of pure air completely banished the cold.

Under a little more persuasion, and abundant rations of barley, our team began to increase the speed, and early the next forenoon we arrived at Cedar Canyon. Wishing to establish an apiary out here, Mr. H. explored and found the honey pasturage excellent and unoccupied. An apiary that had been established a little too far up the canyon had been entirely consumed during a brush fire which sometimes sweeps over these mountains. Later visitors will undoubtedly find a booming apiary in the canyon, with my friend as manager.

In this region is one of those large Mexican grants, which, in nearly all cases, are a block under the wheels of progress. This "Jamul" (pronounced *hah-mool*) grant comprises several thousand acres, and for many miles there are no signs of settlement or improvements, though the land is fertile, and accessible to water. For many years it has been in litigation. The old adobe residence is in ruins, and about all that remains is an ancient palm-tree drooping over the few sun-baked bricks. After many years, when the lawyers have exhausted the resources of the parties interested, it will again produce fruits and honey.

We made good progress, and at noon joyfully entered the suburbs of Del Zura. This little hamlet was environed by big hills, and it appeared to us to have all the marks of an excellent bee-pasturage. While our horses were grinding a few quarts of barley we stretched ourselves under the oak-trees and disposed of a few sardines and other luxuries. While thus busily employed we were joined by one of the residents, and our inquiries were in relation to certain bee-ranches further along. After giving us the desired information he said he owned a small apiary near town. When he began to talk of his apiary a cloud seemed to hover over his features, and he said he supposed he would have to move his bees; for one of his neighbors, who owned a small fig-orchard, was making the air blue with his threats against all of the apiaries within ten miles of him. It seems that this man had a little money to lend, and was getting an interest of from 12 to 15 per cent. He became very much of a big man, and began to imagine that he owned the whole country. He was, furthermore, encouraged to make his threats from the fact that a Major Chase, another fruit-man living in an adjoining town, had brought suit against a bee-keeper, and obtained a judgment against him, and he was ordered to move his bees; but before a new location could be found and the bees moved, some persons, presumably a few hirelings from the major, stole out under the cover of night and burned the entire apiary, and that ended that case. It was also generally believed that the verdict of the jury was obtained through bribery.

Now in relation to figs: Bees never injure good sound fruit. Certain varieties of figs are, however, subject to fermentation upon the large end. A small portion will swell up and burst, and the fig is ruined; but as soon as it bursts, the bees step in and clean up the remainder.

At a recent meeting of the Southern California Pomological Society a paper was read upon this subject, and the cause of fermentation was traced to a small insect that deposits a small amount of sour yeast-like substance in the end of the fig; and this society, in their treatment of the subject, said not a word in condemnation of the bee. So this man's trouble about his figs is all through ignorance and prejudice. Now, Mr. Small, the bee-keeper giving us his grievances, and all of the bee-keepers we met on this trip, had never so much as heard of the Bee-keepers' Union; and when we depicted the beauties of the Union, and what it had done for bee-keepers, the cloud visibly lifted from his face, and we have no doubt that ere this he is a member.

Another case that harrowed our feelings to a great extent, was in relation to a Mr. Steele, in another town not many miles away. Mr. Steele and his wife were well along in years, and between them managed 150 colonies of bees.

FRUIT BRIGAND.

Their income from the bees was not only enough to support them, but also to enable them to lay aside a little money every year. Some fruit-men moved in, and then there commenced a nagging of the old people. The nagging, and threats of a lawsuit, caused them to keep the bees in the hives during a portion of the day; but the confinement resulted in the death of several colonies, and from this they came to the conclusion that they might as well kill all of them, and, with burdened hearts, the whole 150 were consigned to the sulphur-pit. After the deed had been accomplished, and the contents rendered into wax, the hives were replaced upon their stands; and it is supposable that the fruit-men continued to fire their threats against the desolate apiary. It was our intention to see this bee-keeper upon our return,

but we feared our horse Bob would fare hard over the rough roads we should have to travel, and we kept a more merciful and direct route.

The rank injustice in nearly all of these cases is apparent from the fact that the bee-keepers were the first to occupy the country. Then in the case of the Del Zura fig-grower, his profits from figs were probably less than $50, while he wanted to destroy an industry that brought thousands of dollars into the town, and, in fact, has been and is now the leading industry.

We continued our journey again, and, soon after leaving Del Zura, deflected our route a little and climbed up into the mountains to the stock and bee ranch of Mr. S. H. Donahue. Here we pitched our tent and gave our steeds a rest, having made about 25 miles that day, much of the way up hill. Mr. Donahue is the possessor of 500 colonies, and two sons who aid in the management. Two or three apiaries are located back in the mountains, and are worked for extracted honey in a modified Harbison hive. In these cases a "modification" means a sawing-off of the hive on a level with the brood-frames, and an extracting-super worked above. Messrs. Donahue have a fine range, and have obtained some large yields of honey. They were inclined to withhold information in relation to amounts; but we learned indirectly that over 17 tons was the product during the past season. Though these apiaries were three or four miles from Del Zura and the fig-man, still his threats were high enough to reach these mountain apiaries, and cause some little uneasiness. We again rehearsed all of the good qualities of the Union, and trust that we grafted in another branch to the Union tree.

Our tent life among the grand mountains that surrounded us, and our elevation of nearly 2000 feet here, gave us not only an elevation of body, but our spirits began to enliven; and Bro. Hansen made the welkin ring with his shouts and songs, while Bob and Kimball actually became frisky. In following up this route from National City we travel about 15 miles and cross a pass, and enter what we might term a little different or later climate. When we pass Del Zura we cross another of these passes, and the climate is still later. The highest point now in sight is Tecarte Peak, about on the Mexican line. This looked down upon us for several days. Our shotgun had given us an abundance of quail and rabbits, and here was where the training of our dog Queen came in. Just as soon as the gun was discharged, away she would bound and bring in the game. Another kind of game was this: One day, while rattling along, the Rambler's hat sailed off in the rear of the wagon. Queen was directed to get it, and dutifully brought the hat to the wagon. That the dog was rightly named Queen, and a jewel besides, was a thought not only entertained by his owner but also by the

RAMBLER.

JOHNNYCAKE FEEDERS.

PRATT SELF-HIVER A FAILURE.

On page 421 of GLEANINGS for 1892, mention is made of feeding syrup to bees on "johnny-cake" as an experiment. An old bee-keeper from Allegany Co., N. Y., says that it was a common practice in 1840, and prior to that time, there to feed their bees, when they required it, by this method in the spring. They would remove the syrup and bread down to the crust.

SELF-HIVERS.

Personally I have had bad luck with Pratt's self-hiver. Securing one hiver from you, two from Mr. Pratt, and also royalty stamps, I manufactured and placed on trial, selling some direct to others; some were used on the Dovetailed hives; others on box hives; the result was a loss of several swarms caused by the drones filling up the front zinc. I have refunded for those paid for, and hold the hivers for further experiment. I think that explicit directions should be given, so that they may not be applied to the hive until the egg is laid in the queen-cell; and, again, the farmer with only a few swarms wants a hiver that can be attached to a box or Dovetailed hive while he goes to his daily task or to church on Sunday, and also one that will not require lifting off to see if he has a swarm or not.

Of course, these criticisms do not apply to the bee-keeper who devotes his whole time to his bees during swarming time. He would probably be successful with almost any of the devices on the market; but the small bee-keeper or farmer who would be benefited the greatest, and who is eager to accept and try a self-hiver, must have something simple and effective; and the inventor of such a hiver will reap a rich reward.

Colonies have gone into winter in good shape. Ample stores were secured; strong colonies that failed to swarm filled two or three supers of surplus honey. The drouth in September cut short the yield from ladyfinger and buckwheat. I find it profitable to sow buckwheat about the 20th of April; then sow again the first week in August, sowing both Japanese and common varieties. The Japanese made a yield of 23½ bushels per acre, which finds a ready market, either as seed or as flour. We plow early for wheat; sow to buckwheat, cut at first heavy frost; remove, and seed to wheat. The buckwheat leaves the ground in splendid shape for wheat. JACOB NIXON.

Kellogg, Kan., Jan. 4.

[That is right; we want the facts. Possibly, however, the following might suit your purpose better, although we can not fully understand why your experience should be so different from ours.]

THE PRATT 1893 HIVER.

HOW SOME OF THE OBJECTIONS TO THE FORMER DEVICE HAVE BEEN OVERCOME; GOOD IMPROVEMENTS.

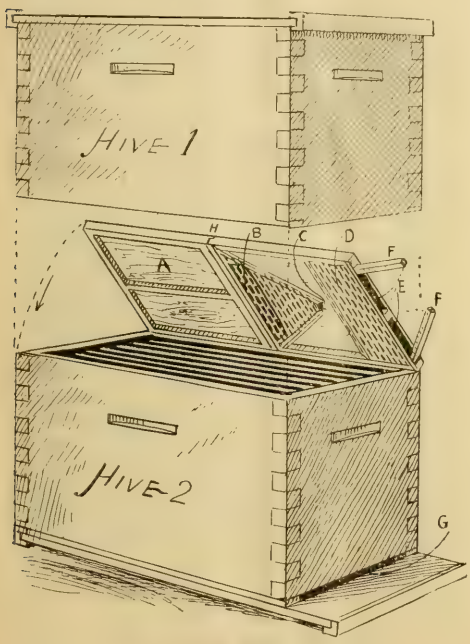
I am sending you by mail one of the 1893 patterns of the Pratt automatic hiver. You will see that I have greatly cheapened the construction, and attached it to a honey-board, all in complete condition to put directly on a hive when received. Many of the purchasers last season did not understand how to attach the hiver to their hives, and there were some who could not understand, although it was explained to them very carefully. I therefore deem it necessary to supply the escape board and excluder all complete, with directions to place on the hives in the simplest possible form.

With these facts in view I have endeavored to construct the device complete in itself, and you will readily understand the advantage this hiver I am sending you has over all the others.

First, you will notice that it is in two parts (divisible at H), making it convenient to pack and mail at a very moderate cost. These two parts intersect and form the honey (or escape) board to cover an eight-frame Dovetailed hive, and can be fastened together by the receiver with three or four nails or not, as he sees fit. As you notice, it is a cheap and light board. I have reduced the escape triangle (H, C) to two simple pieces of ⅜x⅜; also the zinc surface

that covers the triangle is less than half that of the original. The entrance through the board, connecting the triangle with the colony, can be as I have it, or three or four 1½-inch holes, as you see fit to make them.

You will also see that I have attached the excluder D to the front end of the board, with entrance there, and discarded the old-style separate piece. This is much better, as it not only does away with loose parts but affords better ventilation. It is impossible for this to become clogged by drones or rubbish. Drones will work to the extreme front end, and fuss them out of the way until they become exhausted and fall down on the bottom-board, to be scooped out occasionally through the lower entrance G, which is kept blocked up tight. It matters not how many drones a hive may contain, the excluder will never be found so stopped up that there is not ample passageway for the full working force, and for complete and perfect ventilation.



PRATT'S 1893 SELF-HIVER.

Another advantage in having the excluder as it is here is this: A free and open entrance, with no zinc to pass until the bees are inside the hive (a great advantage, I find), affording excellent opportunity for rapid passage to and from the hive, besides aiding perfect ventilation and a direct and short path to either hive.

The little strips of wood, F, F, shoved into the entrance, are on pivots, to open like gates, as shown. These are to support the zinc and wood while in the mail, and are to contract the entrance for any cause when necessary. After a swarm has been hived, these gates can be closed entirely, and the lower entrance opened to them, when the board will act as a bee-escape to reinforce the swarm as the young bees hatch out. E. L. PRATT.

Beverly, Mass., Jan. 10.

[When Mr. Pratt first sent the new device for 1893 we were not favorably impressed with it, and wrote him to that effect. However, we instructed our artist to make a picture of it, and the result is shown above. Subsequently, in following the description through more carefully, we found that Mr. Pratt had still preserved the vital principle of his other hivers that were so successful with us last summer; viz., that the bees on returning go back through an entrance to which they have long been accustomed, but into a different hive, preceded by the queen. If the reader will understand that the lower entrance, G, is supposed to be *closed*, he will readily see that the bees are obliged to use the entrance E only. Of course, before they have swarmed they pass through the entrance E *upward* to hive No. 1. After swarming they return to the same entrance, and thereafter pass *downward* to hive No. 2, because the main attraction—the queen—has gone down below, into an empty hive, affording those conditions that are supposed to satisfy the swarming mania.

The device above differs from the one of last year, in that the perforated zinc in front of the entrance, as at D, was, in the 1892 hiver, placed before the entrance G. This seemed to be objectionable to some (although we never so regarded it), that the bees should travel through an empty hive every time in order to get to the brood-nest in hive No. 1, from which it was expected they would swarm. Mr. Pratt, contemplating this objection, has, in the 1893 hiver, placed the entrance centrally, so that it affords equal access to both hives.

Although Mr. Pratt says nothing about it, we assume that the apiarist, at his convenience, after the swarm has issued, say within two or three days, or a week or even two or three weeks, removes the parent or upper hive, opens the entrance G, and for a time at least allows the bees to have access to both entrances. After they have become partly accustomed to the lower entrance, this special swarming-device is to be removed, and the cover replaced, when of course the entrance G will be used exclusively. There will be, of course, a little confusion for a day or two, but the bees will very readily adapt themselves to the change.

We see no reason why this latest pattern should not work as well as the one of last year; and as it is simpler, and avoids the long bee travel, it will doubtless be preferred to the others. The queen also will be more likely to get into the lower hive because the light from the entrance E is so close to the apex C of the zinc cone. This may make all the difference between success and failure in the case of Jacob Nixon above.]

WE OUGHT TO BE BETTER ACQUAINTED.

DR. C. C. MILLER TELLS WHY.

I am expecting the World's Fair and the North American convention next year, among other things, to do some good in the way of bringing nearer together the bee-keepers of the world. I don't mean merely to bring them together at Chicago, but to get them so interested in each other that they will have a better understanding, and a better appreciation of each other. This will help to bring about a community of interests, and thereby the well-being of all will be advanced.

In a late number of *Illustrierte Bienenzeitung*, the editor takes Frank Benton to task for saying, at the Illinois State convention, that Europeans were behind the times. Possibly there is just a little tendency on each side to think, "We have it all." Now and then, in the *British Bee Journal*, some one speaks in not the most complimentary terms of Americans as coming slowly to some view or practice

that has been long adopted in England. And it does seem a little strange to see some topic come up and be redhot on one side the ocean, without even being mentioned on the other.

Whatever may be best on the other side, I'm pretty sure it would be a good thing for American bee-keepers to get out of their self-conceited exclusiveness. Before you settle down into the happy belief that you have a monopoly of all progress, my self-satisfied Yankee, please wipe out of existence all knowledge of the extractor, parthenogenesis, and comb foundation, and see where you will be. And yet the germs of these things were not hatched this side the water. If you refer to the movable-comb hive, I think you will find thousands of German bee-keepers will stoutly insist that Dzierzon alone was the inventor of movable combs, while as many other thousands on this side will say, "Who is Dzierzon?" and insist that, if Langstroth had not been born, there would have been no movable combs. Even although the movable comb of Langstroth may have been more fully developed than that of Dzierzon, there is ignorance and prejudice on both sides.

Each side needs the other, and it will do us good to get together. I feel pretty sure that each side will have more respect and good will for the other when the big show is over.

HOW BEES HEAR (?)

The question as to whether bees can hear, while not settled beyond the possibility of a doubt, is one which most bee-keepers answer in the affirmative; but investigators heretofore have not been able to locate definitely any organs of hearing. Some have supposed they might be situated on the antennæ, but such an opinion has been given rather as a modest suggestion, without attempting to offer any proof.

In a late number of the *American Bee Journal*, however, the whole matter is fully settled, the writer, G. P. Hachenberg, M. D., giving out the information as to where and what the organs of hearing are. First, he settles that in bees there is no tympanum; for if a bee had a tympanum in proportion to the size of its body it would be so little that it would be no good. He doesn't state exactly how small a tympanum must be before it ceases to tymp real good; but at any rate, such a one as a bee could carry around wouldn't tymp at all. But instead of a tympanum the bee has a thousand setæ, or bristles, over its body, sticking up, that serve as so many tuning-forks. "This fuzz serves the function of the tympanum." Just how the doctor found this out he does not say; but that is a small matter so long as we have the knowledge; and he differs from all previous investigators, in that he does not deal with a supposition or a suggested theory, but with an ascertained fact.

The robber, he tells us, is smooth and shining, "and, without a seta on its body, it is evidently deaf and dumb. It hears nothing—no angry warning will keep it out of any hive, for it hears it not." How it operates before it loses its setæ, or whether it is born without any fuzz, we are not told.

WE NEED BEE-EXPERIMENT STATIONS.

I wonder if all is being done that ought to be done toward getting experiments in bee culture made at public expense. I have some doubt as to whether any class of men, as a whole, have spent more time and money in experiments than bee-keepers. There are always unsolved problems, the proper solution of which will help to make the cost of honey less. If one man experiments for a county, the other bee-keepers of the county helping to bear the expense, there would be a saving. If one man, with every convenience at his command, makes the experiments for the State, the saving would be immense.

If you want to know what is the best turnip to raise, or the best cultivation to give the turnip, you can find out from the experiment station of your State. But how much can you find out from that same station about bees or their culture? The turnip business is all right; the State should experiment for all in that direction, and yet the bee-interest exceeds that of the turnip—at least, I think it does in most States.

Why is it that there is nothing done with bees? Possibly one reason is, that the bee business, as a business, is newer. Until lately, getting a crop of honey was all a matter of luck; while, to raise a crop of turnips, one needed to know how. In public matters, changes are slowly made; and the fact that nothing has been done in the way of public experiments heretofore is sufficient reason why nothing of the kind should be done this year. If bee-keepers stir in the matter, and keep stirring, there is little doubt that something will be done in all the States where the honey crop rises to any considerable importance. The Hatch Bill, with $15,000 to each State, makes a more hopeful outlook than ever before. If one State makes a break, it will be easier for all others to follow. If Ohio has a proper outfit established, that will help mightily as an argument with Illinois bee-keepers to get the same thing done in their State, and *vice versa*. Isn't this a topic worth keeping alive?

Marengo, Ill. C. C. Miller.

SELLING HONEY WITH A WHEEL.

Mr. Root:—I was very much interested in your article on your wheel, Nov. 15, as I bought a Victor pneumatic early last fall for business, and find it a source of great pleasure in the bargain. I got it to help me in taking orders for honey, and delivering the same; and I find that I can do as much running around in an hour and a half as I could in half a day without it. I sell the most of my crop of honey (extracted) in the quart Mason fruit-jar. I have a box made of wood (thin boards), covered with black carriage cloth, which holds two jars, which I sling under my arm by means of a strap over my shoulder. With this incumbrance I learned to ride fairly, although it used to annoy me by swinging forward when I mounted; but I need accommodations for two or four more cans, and I think your suggestion of carrying the load on the front wheel, and as low as possible, is a good one. I am thinking of making leather pouches with wooden bottoms, for protection, to attach to the front forks if possible. Now, friend Root, if your ingenuity gets up any thing for carrying glass cans of honey on a bicycle, please let us know. I have about 800 quarts to sell and deliver yet, and I live about four blocks further away from the business portion of the city than when you favored me with a call last.

Manistee, Mich. Walter Harmer.

[Friend H., you can easily carry a dozen Mason jars on your wheel by making a couple of boxes to hang over the front wheel, saddle-bags fashion. I use such an arrangement for carrying mail-bags, and I have carried 75 lbs. without any trouble. One dozen Mason quart jars filled with honey would not weigh over 50 lbs. I feel certain that the great business world has as yet scarcely a glimpse of what the wheel will be in time, in this direction. The ingenuity of our best minds has been for so many years devoted to this matter of reducing friction, that no method of transportation can just now compare with it.]

THE PERSIMMON-TREE AS A HONEY-PLANT.

SOMETHING ABOUT PERSIMMONS AS A FRUIT.

Friend Root:—I send you a small present. It consists of persimmons, and a photograph of a persimmon-tree, with people picking the delicious fruit. Some of them "caught on" when they saw the Kodak. The day was very cloudy, dark, and wet; consequently the photo is not what one would desire; but it will give you a glimpse. This tree had from twelve to fifteen bushels of fruit on it. The fruit should have been gathered sooner, to ship; but the weather prevented. Now, friend Root, please don't think this fruit rotten, for it is just getting ripe, and must become quite soft before one can relish it. The present is for A. I. Root, to dispose of to suit himself. Of course, I should like Ernest and all to have a persimmon or two;

A KODAK VIEW FROM MORGAN CO., O.

wouldn't you, friend Root? There is no bloom, perhaps, in the world that bees are so eager to work on. I have seen bees fighting for it just as they would were you to place a comb of honey out where they could get at it.

Reinersville, O., Dec. 19. J. A. GOLDEN.

[Friend G., we are all of us exceedingly obliged to you. I am the more interested in the whole matter, because the tree is found in our own State of Ohio. Perhaps I should explain to our readers that friend Golden was kind enough to send us a whole pailful of persimmons. They are packed in one-pound honey-sections, a top and bottom being tacked on. I learned to eat them in California, so I had no trouble in eating them here; and I was not afraid of the soft ones. Quite a good many would have it, however, that they were spoiled, and could hardly be induced to taste them. They are so delicious to my taste that I began eating them as I do strawberries, a quart at a meal. I would not recommend, however, taking them in that way unless your digestion is very good. Now, if persimmons grow in our State naturally, why can't the great delicious Japanese persimmon of the Pacific coast also be grown here? And could they not be grafted on to the native trees? I think one of the agricultural papers has said that the large foreign persimmons are not sufficently hardy. The fact that these trees are such good honey-plants is another inducement for bee-keepers to take hold of them. My verdict is, that they are just as nice as figs and raisins. The seeds are a little bit more of an annoyance; but I have lately seen it stated in some of the papers that there is a seedless persimmon. Judging from the size of the human figures, and the fence that runs beside the tree, persimmon-trees must be quite large.] A. I. R.

NAILS.

HOW TO USE THEM.

Every year I am more surprised at the stupidity of many who drive nails. In this age, with so great a variety of nails for all purposes, such lack of knowledge is deplorable. In planking up a building I employed several machanics to do it. I perceived that they drove nails indiscriminately. I suggested that they should be used scientifically—that is, every nail should be driven so the strain upon it should bind the parts closer, while the proper number for each width of plank should be used; yet not one of the seven men could master the principle, and nails were often driven so as to eventually weaken the parts by drawing asunder. I often find boxes of heavy material badly racked, that look as if they had been made by an eight-year-old girl. I have made boxes of ½-inch boards to pack and ship, with two or more transfers, 600 miles, 250 lbs. of solid freight, with few or no cleats or bands, and I never had such a package broken open in transit.

I find uses for which no wire nails now manufactured can take the place of cut nails; for instance, where great strength is required in rough work. Where weight is suspended, *heavy* cut nails driven flat (a guard against splitting excepted) is better than edgewise; but where connection of parts only is desired, *light* cut nails are better. The last keg of ten-penny cut nails I got was a wide finishing nail with a common large head; and, being slightly curved, required straightening to drive in ⅞ lumber, or they must be set to the proper curve. I wonder if that manufacturer was not the man who used to make gun-barrels curved to shoot around the mountain. Its width and taper limited its use, and I would not take another such keg at half price.

Correctly driven, four nails will hold as much as twelve nails driven at the opposite angle. For boxes and crates, long slim nails driven near the edge are superior to heavier ones driven near the center; and where several boards are used on a side, cleats may often be dispensed with by skill in lapping on the ends and nailing the edges so the joints are firmer than the sound timber on either side. Quick light taps on a nail will often drive it through a knot or cross-grained spot without splitting. The best nail for tensile strength I ever found was years ago—a rough French square wire, hard and tough, hard to draw, and the blunt point was easily driven without splitting readily. A nearly square cut box nail is the best I can find now. If wire nails were a little rough I think they would hold better. Sometimes I rust them. Nails driven into the end of the grain of wood should be driven slanting to hold more firmly and prevent splitting. It is said a ten-penny nail has sustained two tons. To some extent wire nails take the place of clout nails, proper length and size considered, driving at an angle so they will curve as they strike the iron, and turn back; or they may be driven

through, and then about ⅛ of the projecting point is bent nearly ¼ over (always across the grain), and then drive it in without starting the head.

CLOSER PACKING.

For years I have looked for manufacturers to pack their larger sizes of nails in about one-fifth the space now used, and at less expense, by using two sheet-iron heads and a sheet-iron band, either round, for convenience in handling, or square, to utilize space in packing. Who would not welcome such an improvement for handling and storing? Our wooden kegs that sometimes fall to pieces before reaching the consumer are a disgrace to Yankee invention.

HEAVY GOODS IN LIGHT PACKAGES.

How much easier it is to roll a heavy barrel than to handle half the weight in a box! I have packed books, glass, etc., weighing 300 lbs., in a sugar barrel weighing 25 lbs., which, to have carried equally safe boxed, would have required a box and extra packing weighing 150 lbs., thereby saving in the cost of box and freight on it, sufficient to pay the freight on the goods hundreds of miles.

FILLING FOR DOUBLE-WALLED HIVES.

From reading and observation I conclude that double-walled hives capable of producing an interior uniform temperature have decided advantages over thin walls, where cost, bulk, and weight do not prevent their use. Dead air has its defects, because it is not dead, as a varying temperature on either side sends warm air up and cold air down, causing a current. May not this be overcome in part by thick pasteboard on each side of the air-chamber? or entirely so by a central partition of pasteboard, as paper is the best non-conductor of heat or cold? Cheshire says cork dust, to fill a one-inch vacuum, is 14 times better than dead air. Filling for hollow walls must be impervious to moisture and heat, to secure permanent results.

Allegan, Mich., Jan. 10. W. H. GARDNER.

[Our correspondent writes as though he had had experience in nail-driving. We believe all he says is true.]

HIVE-COVERS.

USEFUL TOOLS ABOUT THE BEE-YARD, ETC.

A friend in Florida recently wrote to know how I now like the corrugated iron covers recommended by me in GLEANINGS several years ago, and just how I used them. My answer was, "They are indispensable with me." The smaller corrugations are best, as the cover lies closer and smoother. The sheets are cut at the factory, any size ordered. Mine are about three inches wider and five inches longer than the hives. This gives a small projection all around, which is quite a protection to the life of the hive, aside from the shade. The corrugations should run the long way of the hive. Now, let's see: First, we have the thin wood cover, which is framed something like honey-boards. This thin cover takes the place of all other inside covers such as cotton cloth, enamel cloth, etc., both winter and summer, as it is made to fit the surplus cases as well as brood-chambers. Next we have the corrugated iron cover which will not leak; and, next, a shade-board made of ⅞-inch common boards, about five or six inches wide, cleated on to two narrow pieces, which raises the top cover or shade-board ⅞ of an inch above the iron cover. This shade-board is of about the same size as the iron cover, and heavy enough to hold all down. If three covers seem too many to handle, a few wire nails will fasten the iron cover to the bottom side of the shade-board, and it is practically one; and, combining three very essential qualities, they will not leak, will not get hot, and will not wear out soon; and the cost is not more than that of any other good cover.

My work-block is a piece of solid oak, 6 inches thick, 12 inches wide, 3 feet long, placed on a hive-body. This makes a very solid low bench on which to nail up hives, supers, etc. The sides and ends being square, it is very little trouble to nail pieces on it for forms to hold the pieces of hives while nailing; and when through with the form, the block can be turned upside down, the form put out of the way, and smooth block on top. You would not like to be without it.

One of the most useful small things about my bee-keeping is a short stout putty-knife. The regular knife is much too flexible, and should be ground down in length until it is stiff, and about one inch wide. This will pry apart covers, hives, supers, and frames; clean wax and propolis from any thing, and will always be the right thing in the right place.

My Barnes foot-power circular saw is not often used to do much work; but how could I get along without it? It cost me, second handed, less than ten dollars. I got the last one here, and it pays its way nicely.

A pair of cheap scissors — yes, and you can't do better than to order several pairs from A. I. Root—are the best for the money I ever saw.

It is with some satisfaction that the writer has lived to see his idea of the bee-escape march steadily to the front, and to see that those who were inclined to laugh or sneer at it fall into line and bring up the rear. Porter's improvement is the best I have used, and will clean a super in short order, if the conditions are right; and if they are not right, they can be made so very easily with a little experience.

Can bees smell? This question was called to mind the past season by a queensware dealer sending for me to see my bees in one of his show-windows. Examination showed that they were trying to enter a lot of paper boxes containing "aromatic toothpicks" made of basswood and flavored with cinnamon — no sweet taste about them. J. S. REESE.

Winchester, Ky., Jan. 26.

THE OUTLOOK FOR SOUTHERN CALIFORNIA NOT FLATTERING.

THE WONDERFUL HONEY RESOURCES OF THE STATE IN A GOOD YEAR.

The outlook for honey here this year is by no means flattering. The great and abundant rains that have flooded the northern part of this State did not reach us, except in a very moderate form—so very moderate that we came very near getting no rain at all. We have not yet had over five inches, and it is now past the middle of January. But to you folks in the East this would be nothing to cause any alarm; but here it means bread without butter—and very little of that. There you have snow and ice, sleet and frost in abundance. When the frost is drawn out of the ground in the spring, you have slush and mud too numerous to mention. Your ground at that time is just in the condition that every bee-keeper here wants our ground to be on the first of April—so wet, slushy, and swampy that there are but few places where an animal will not bog down. Ah! that would make a honey year like 1884 or 1886. But, no! if every year were like those years, California would flood the world with honey!

I saw in GLEANINGS, some time ago, that one of your honey-reporters stated that the crop of 1892 was not a failure in California, because they "had already received 12 carloads of honey." It is very evident that this firm does not appreciate the honey resources of California. In a good year, 12 cars could be loaded within a radius of ten miles of my apiary! San Diego Co., in a good year, will produce two and a half million pounds of honey, and not exert herself beyond her strength. This is 125 carloads, of 20,000 lbs. each. In 1886 the firm of Surr & Winchester bought, of the crop of San Diego Co., over two million pounds. There were other buyers too, and many producers shipped direct to San Francisco. Thus it will be seen that Surr & Winchester alone had, of San Diego Co. honey, 100 carloads of 20,000 lbs. each. In 1887 they still held it, and they made money by so doing, for 1887 was a very poor honey year. You mentioned it in GLEANINGS, but I think you gave no name of the parties who held the honey. Yes, we are waiting for a good crop, and we have been waiting for nearly seven long years. But we are in the hands of an all-wise Providence, who knows much better what we ought to have than we do ourselves.

Escondido, Cal., Jan. 18. J. P. ISRAEL.

[Here is something that is more encouraging. As it was written some ten days later we may hope that friend Israel's locality has a little share of that rain.]

SOUTHERN CALIFORNIA; PROSPECTS IMPROVING.

I have a number of colonies of bees with from four to seven frames of brood, a month to six weeks earlier than usual. We are now having a splendid rain, and, with favorable spring rains and weather, Providence permitting, the "silver lining" will be at hand.

Ventura, Cal., Jan. 27. M. H. MENDLESON.

LADIES' CONVERSAZIONE.

MRS. AXTELL'S LETTER.

HOW GLEANINGS SPOILS THE BAKING.

Mr. Root:—Somehow you make your journal very readable. I thought possibly one reason was because *I* had an article in it; for you know that, when we take a part in meeting, we always think we have had a good one. But I have been so busy for six weeks or more, sewing for the Indian orphan school, mending up old clothing given by people in Roseville, etc., that I could not take time for writing. Yet it was not so much the time as it was my lame right hand and arm. I could not do more than my housework and the sewing; and yet GLEANINGS is just as interesting with none of my articles. I often wish it would not drop in upon me when I am baking or doing important work, for I can hardly go on with my work until I have at least looked it through, and sometimes my bread has got scorched, and I have told Mr. Axtell that GLEANINGS was to blame.

BEES WINTERING WELL.

Our 127 colonies seem to be wintering finely, with fewer dead bees thrown out upon the cellar bottom than usual. Mr. Axtell says the white clover is all right yet. I think I never saw brood-combs heavier for winter than they were last fall. The colonies of bees seemed to average rather small, however. I think it was on account of crowding the queen. But after inserting an empty comb, many of the queens would not put eggs in it, but would confine the brood-nest to one side of the comb; yet I think they have bees enough to winter well, as an average colony with a good queen winters just as well as a large one, unless one could have all the colonies large and the temperature of the cellar to correspond. If we know of a large colony we generally put it in the coldest part of the cellar, and the weak ones in the center. Instead of lifting our colonies up on to an inch block under the frames, as we have done for several years, we lifted up one side of the hive, which gives them a large entrance in the cellar this winter, so as to save the time of lifting up and setting them down on the bottom-board again in spring, which all know is considerable work where one has 100 colonies. If dead bees do not clog up under the frames, I don't see why they will not winter just as well; and if they are not kept sufficiently cleaned out to prevent clogging, we can run in a wire and clean them out some time when the cellar is cool.

THE AXTELLS' EXPERIENCE WITH BEE-ESCAPES.

We have tried the Porter, Dibbern, and the Reese bee-escapes, and find them all good; but when taking off the sections in the fall, many supers would have but few bees in them. We took just a little time to smoke the bees and brush them off, and carry direct to the honey-house rather than to take the time to slip the escapes under and return the next day or so for supers, which hive, if not marked, is apt to be forgotten when there are from 50 to 100 or more colonies in the apiary. The supers that had many bees in we piled six to ten high above weak colonies, which built them up nicely; but there must be no escape-board put under the supers, as the bees escaping one by one from the supers will, by some colonies, be killed as fast as they go down; other colonies would receive them all right. But a safe way is to lay a cloth over the brood-frames, doubled over at back and front, or at one side, leaving a passageway out of each row of sections. The honey in the sections invites the bees above, and they seem to pay no attention at all to the bees. In a day or so the top supers may be taken off, but the lower one may have to remain several days unless an escape is put under; but it is a real pleasure to see how nicely the bees were all accepted, and the colony built up. Probably a few of the bees would, when they flew out, return to their own hives; but the most of the bees seemed to remain.

In using the cone escapes, if too small they will clog, and there must be about an inch or a little more between the lower end of the cone and the brood-combs, or they will clog in return. MRS. L. C. AXTELL.

Roseville, Ill., Jan. 6, 1893.

[We make it a point to let the pages of GLEANINGS speak for themselves so far as possible, and we are glad that they do, as many letters unpublished show. We are not glad that the journal sometimes spoils the baking; but we are glad to have it welcomed when it comes into the homes of the bee-keeper.]

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

HOW TO GET ALL THE WAX OUT OF OLD COMBS.

Make a sieve the right size to go into the top of a barrel. Set it over the barrel on a couple of sticks. Throw in several combs; then, with a hose connected to a steam-boiler pipe, let on

the boiling water freely, at the same time stirring the combs on the sieve. There should be some hot water in the barrel before the wax drops through the sieve. After the barrel is two-thirds full of water it should be kept from filling fuller by an outlet at or near the bottom. Anybody can melt up a hundred combs in a short time. By emptying the sieve occasionally there will not be a particle of wax remaining in the refuse. We have a large boiler which furnishes steam for a 25-horse-power engine. Of course, everybody hasn't the water so handy. A solar extractor will take a certain per cent of the wax out; but quite a little remains in the skins of the cells, etc. G. B.

East Avon, N. Y., Jan. 24.

[We have tried almost the same plan, and we find it does not get all the wax out. If you will take the slumgum that is left in the sieve and run it while steaming hot through a wax-press you will get much more wax out.]

BEES NECESSARY FOR FRUIT; WHERE THE CLUSTER OF BEES SHOULD BE FOR WINTERING.

In Stray Straws, Jan. 1, Dr. Miller quotes from a French horticultural monthly as to the usefulness of bees in orchards. Permit me, Mr. Editor, to relate the following:

Before my brother and myself engaged in bee-keeping no bees were kept in this vicinity. One of our near neighbors has a large orchard, and in this orchard are several fine large trees of a certain variety, which, however, never yielded fruit. In the spring of 1885 we commenced bee-keeping, and from that date those trees have always yielded bountifully. The owner of the orchard himself gives our bees the credit, and he related the above incident to us.

Last fall we packed a number of colonies for winter on two sets of frames—one set of frames above the other, the upper set solid full of honey, and the lower set with empty combs for the bees to cluster in according to the advice of Mr. E. France. One fine large colony, however, we packed according to the directions in an article by E. E. Hasty on the subject, as given by him in the *American Bee-keeper*, Nov., 1892. In GLEANINGS, Jan. 1, Mr. E. France pointed out the fallacy of Hasty's method, and I got uneasy lest I should lose my fine colony of bees. To-day, however, the temperature was so that we could make an examination, and it turned out exactly as Mr. France said in his article. The colony packed according to Hasty starved during this long cold spell, with 30 lbs. of good honey below them, because, as Mr. France says, the bees can work up but not down in very cold weather. All the colonies packed according to the method of Mr. France are in excellent condition. Hereafter I will keep in the middle of the road, and winter my bees as Mr. France winters his. By the way, I hope Mr. France will write more such practical articles for GLEANINGS. The one in the issue of Jan. 1 is worth to me many times the subscription price of GLEANINGS.

Maumee, Ohio, Jan. 23. LEWIS C. JÆSSING.

THE HONEY AND THE LAND OF CANAAN.

A colored minister of some note once invited a white brother to preach to his people. The latter took the opportunity to suggest to the colored folks that they should be a little more quiet in their demonstrations. Previous to this, some of the boys and girls had been looking through the windows of the colored church, to see the colored people at their devotions. After the sermon, the colored preacher made a sort of summing-up, and excused his people just a little, in the following words:

"Yes, I see dem stan' las' winter roun' de doors an' under de windows an laff; an' dey peek in an' laff. An' I 'member wot I saw las' summer 'mong de bees. Some ob de hives was nice and clean an' still like 'spectable meetin's, an' the odders was bustin' wid honey; and the bees kep' goin' an' comin' in from de clover; dey jes kep on fillin' up the hive till the honey was a flowin' like de lan' of Canan. An' I saw all round de hives was de ants an' worms, an' de drones, an' black bugs, an' dey kep' on de outside. Dey was'n bees. Dey could'n make de honey for darselves. Dey could'n fly to de clover an' de honeysuckle. Dey jes hung roun' de bustin' hive an' liv' on the drippin's.

"An' de boys and gals come up yar an' hang roun'. Jess come in an' we'll show you how de gospel bees do! Come in an' we'll lead you to de clover! Come in—we'll make your wings grow! Come in! won't yer? Well, den, poor things, let 'em stan' roun' de outside and have the drippin's. We's got honey in dis hive!"

THE V-EDGE TO HOFFMAN FRAMES A NUISANCE; VASELINE AND GREASE NOT A PREVENTIVE OF PROPOLIS.

Last season you requested that bee-keepers try vaseline as a preventive of propolis. Early last spring I rubbed a quantity of my frames with vaseline, especially the end-bars. I used tallow on a few, and vaseline and tallow melted together, about equal quantities of each, on several; and so far as results are concerned, I can't see any difference. None proved a thorough preventive. By the first of October, all the frames were "stuck" fast together with propolis; but the bees were slower to commence the operation than they generally are.

The V-edges of end-bars, as on your Hoffman frames, are particularly objectionable. Just as Dr. Miller predicted, the bees fill the space with propolis. I want closed-end frames, but they must fit together with a square joint, from this time on.

PUNICS.

In the fall of 1891 I purchased a tested Punic queen from an eastern breeder, paying $7.00 for her. So far her bees have not filled the recommendation at all. I had three colonies of Italians that surpassed them in gathering honey last year.

PUNICS BAD STINGERS.

The Punics are the worst to sting of any bees I ever saw, and the worst robbers. The colony cast one swarm; and when I opened it to cut out queen-cells I expected to find cells by the handfuls, as we had been told that they build cells in large quantities, even using drone-cells for this purpose; but I was greatly surprised to find only 13 cells. The only thing they come up to recommendation in with me is the vast amount of propolis they gather. I will try them in nuclei another season; and if they fail to come up to recommendation in that, I will discard them altogether and keep only the Italians. The honey gathered and capped by the Punics looks dark and greasy. They cap their honey darker than the Italians.

T. K. MASSIE.

Concord Church, W. Va., Jan., 1893.

[Your experience tallies quite closely with ours regarding the Punics. Our experience with the V-edge is not yours.]

THE SEALED-COVER IDEA NOT A SUCCESS THIS WINTER, AND WHY.

The sealed-cover idea has proven a failure with me this winter. It is not what it appears to be when tested by a cold winter. I have lost one-third of my bees that had sealed covers on their hives, while those with chaff cushions on are all alive.

In the hives with sealed covers, the moisture from the bees ran down and froze in the en-

trance so as to close some of them solid with ice, and the bees smothered. The hives were packed in chaff, and well protected; but when the moisture came in contact with the outside air, it froze before it could run out of the hive. If I had banked the front of the hives with snow, I think the water would have run out before freezing, and the bees would have been saved. The bees had a cleansing flight the 28th inst., the first one since the fore part of November. One colony has the diarrhea very badly.

Flat Rock, Mich., Jan. 31. D. I. WAGAR.

[That's right; let's have the facts.]

HOW FAR DO BEES GO IN SEARCH OF NECTAR? WILL BEES EAT HERRINGS?

We take the following from the *British Bee Journal*, of Jan. 26:

Mr. Heddon, the American apiarist, puts down an "area," or nectar-gathering field, for an apiary at six miles; *i. e.*, a radius of three miles, with the apiary as the center. On the other hand, Mr. S. Simmins assures us that honey will not be profitably collected if the bees have to go more than half a mile from the apiary. Yesterday I received a visit from a friend residing about 150 miles further inland from where my apiary is located, and where the flora is totally different. "There's one blessing you enjoy," he remarked, as we strolled through the apiary, "and that is, you've none of that beastly 'Noorse Doorn' in these parts. I thought to escape it myself, but my bees store the bitter honey it yields to a great extent in my hives, and yet the nearest 'Norse Doorn' is a good twelve hours' ride (seventy-two miles) from my farm!" What will Mr. Simmins say to that?

A Devonshire man out here tells me that he has repeatedly seen his father place a red herring at the flight-hole of his hives, and that the bees eat it with avidity, leaving only the bones! He assures me this in all earnest. I at first concluded it to be some ancient country dodge to drive off robbers, the smell of the herring overpowering that of the stores and the odor emanating from the hive; but he assures me the bees *eat* it, and that he has often seen the skeleton, or clean-picked bones, of the fish lying before the flight-hole! What next? Can any of your readers confirm this? I know that they feed horses on fish in Iceland; but can it be possible that bees too enjoy such diet?

Cape of Good Hope. S. D.

We consider the bee-pasturage inclosed within a radius of two miles from his apiary comprises all the gathering-ground of any practical value to the apiarian. In proof of this we know of a case where several stocks were reduced to starvation-point one season, with an avenue of lime-trees situated two miles away. And from these same limes, the same season, bees located near at hand gathered plenty of honey for themselves, and a fair amount of surplus. Our far-away correspondent's "friend" could surely not be serious, or else he was wofully ignorant of the flying-powers of bees. It is absurd to talk of their traveling a twentieth part of seventy-two miles for nectar from any source. As to the "red-herring" story, we certainly never heard of bees possessing a taste for fish of any kind, though they have no distaste for a certain amount of salt. It will be an easy matter, however, to either disprove or verify the story at the cost of a red herring.—*Eds. B. B. J.*]

[Bees in this country have been known to fly from an island 7 miles to the mainland, in search of stores. See April number of GLEANINGS, 1882. We have had other corroborative testimony, and Doolittle claims that bees go from three to six miles, from choice, and that his bees went from four to five miles to the teasels, without any teasels being nearer than 3½ miles. Bees do go long distances, but usually not more than two miles, we think.—ED. GLEANINGS.]

THE HEWES ESCAPE; WHAT THE PORTERS SAY OF IT.

The Hewes burred-hole-tin-escape idea, permit us to say, we experimented very carefully with in the spring of 1890; and had we been able to get any thing satisfactory out of it, the Porter escape would never have been known to the public. We found it impracticable to make holes through which the bees could not return readily when they wished, and impossible to make any provision for the escape of drones.

Lewiston, Ill., Jan. 19. R. & E. C. PORTER.

YELLOW JESSAMINE.

I have in my yard two jessamine vines. I have watched them closely for several years; and my bees work on them from May till late in the fall. It is one of the plants that the bees work on from early morn until late in the evening, and all summer. Can you tell something about them as a honey-plant?

Union, Tenn., Jan. 24. J. P. RALSTON.

[Honey from yellow jessamine is poisonous; bees are said to work on it very freely.]

THE ALFALFA FIELDS; INFORMATION WANTED.

Will some bee-keepers who live in the irrigated alfalfa regions tell us whether their seasons vary as much there as in other places? One not acquainted with the facts would suppose that, with a warm climate, and the moisture under control, the seasons would be nearly alike. How is it? W. H. UPTON.

Morning Sun, Iowa, Jan. 31.

MAPLE SAP AS A BASE FOR BEVERAGES.

Friend Root:—I believe you are in a maple-sugar locality, so maple sap may soon be plentiful with you. If it is new to you, let me make a suggestion to you. The first good, cool, fresh hard-maple sap you get, please make some lemonade of it, and see how you like it. Then use some sap instead of water to make the Roots some coffee—if you use coffee.

Kingsville, O. N. T. PHELPS.

[Very good, friend P. I never tried lemonade made of maple sap; but sap coffee has been a favorite beverage with the Roots ever since I can remember. Come to think of it, you know I do not drink coffee now—new milk right from the cow instead—so I think I will take mine in lemonade. For all these purposes it must be remembered that maple sap changes in a very few hours; and to have it nice it should be taken right from the tree, and that which runs in comparatively cold weather—the first of the season, as you suggest.]

PROPER POSITION OF STORES FOR WINTERING.

On reading the article on wintering, by E. France, page 19, it occurred to me to state our experience last winter. I had two swarms, good ones, and my father and mother had five. We had four in Nonpariel hives, winter cases, packed on the summer stand, and three in Cary hives in the cellar. Six swarms wintered. One of mine died. (Those wintered out of doors were in much better condition, and gave us nearly all our surplus.) It was one of the best swarms outdoors. I examined the combs to see if I could find the cause of their dying. The bees were clustered in the upper story, looking exactly like your picture of a comb of dead bees; and as Mr. France says, they cluster in cold weather close in the combs, a bee in a cell. The combs of the upper story had not a drop of honey in them, and were as white and clean as the combs in supers. In the lower story was

plenty of capped sugar stores. The thought suggested itself to me that they starved; but it did not look reasonable. Now I believe it.

In our climate this is a very important matter. This winter we have 17 colonies, some full of honey above, some below, and some with plenty in both stories. We will report results in the spring, though I should put all the honey I could in the upper stories now if it were not too late. We are only just beginners in bee-keeping: but, thanks to our teacher, Mr. A. A. Byard, and the bee-books we have read, we have a good start, and have succeeded well so far. LENA L. CROWNINSHIELD.

Chesterfield, N. H., Jan. 7.

WINTERING BEES IN THE SOUTH.

We know nothing, by our experience in the South, of the experience and trouble they have in wintering bees in the North—no cellars nor housing is required in the South. We see it is more trouble and expense in the North to winter bees than to care for them in the summer. We have none of that trouble and expense. Bees winter outdoors here without any danger or risk; all that is required here is a good tight hive and 15 or 20 pounds of honey; in ordinary winters 15 pounds will do very well. Our bees gather honey here sometimes in November and December. They gather it from pine-trees mostly. We have 90 colonies, all Italians. We have not lost a colony so far.

Decatur, Miss., Jan. 20. N. E. CLEVELAND.

A PALETTE KNIFE A HANDY UTENSIL FOR THE HOUSE.

I want to thank C. C. Miller for his article on page 923, that was not about bees, but how to make my folks happy with 26 cts. Now I am going to pay Dr. Miller right back; but it will cost him 50 cts., and I am sure it will please his wife more than twice as much as the stove-mat did, for it can be used in a great many different ways. It is a palette knife. It is a very thin knife painters use to mix paint. The most desirable size has a blade 8 inches long, 1¼ wide, round at the end. Our people use it for scraping kettles, as it will curve right around the inside of a round-bottom kettle; also for turning eggs, taking out cookies, and turning pancakes, meat, etc. In fact, I have bought them by the half-dozen, and given them to my relatives and friends. W. L. COGGSHALL.

West Groton, N. Y., Dec. 24.

MAKING OUR PICTURES PRETTIER.

It is not generally known that all half-tone engravings, such as are used in GLEANINGS, can be made to show up clearly and beautifully, and without cost. I am surprised that the way to do this was never published in these pages before—at least, I have never seen it referred to. By trying this method, all the finer half-tones will stand out clear and distinct, just as they would if viewed through a stereoscope. The way to do it is as follows: Hold the picture to be viewed, from 14 to 21 inches away from you; and by folding your fingers so as to form a kind of tube of them, place your hand thus folded to your eye and move the picture into focus. When the right focus is obtained, the different objects will stand out clear and well defined. One never tires of looking at good half-tone engravings after he has once tried this way. Just try it on a few of the portraits in the A B C book or in GLEANINGS. I will vouch that you will be pleased with the result.

North Temescal, Cal. W. A. PRYAL.

[It is a little queer, friend P., that I made the discovery just a day or two before your notice above came to hand. The *American Florist* gave a picture of a mushroom-cellar by flash-light, and I happened to look at the pictures through my fingers, rolled up so as to form a short tube. All at once it seemed a reality. The old gentleman who was among the mushrooms had evidently been down on his knees, for you could see the yellow dust on his pants, and every thing else came out with startling distinctness. I showed the picture to Ernest, and told him that it was one of the finest half-tones I ever saw; but he suggested that any half-tone would come out in relief in almost the same way. We experimented with quite a number before we found that it requires some sort of magnifying-glass to give perspective fully; for without my nose-glasses the illusion is not nearly so perfect. Since then I have been in the habit of distinguishing half-tones from other kinds of pictures by this very test. Even a picture that has a half-tone for its base for the artist to work on comes out sharp and clear when tried in the way mentioned. Of course, any short tube will do as well as the folded hand. One reason for the surprising effect is, that the tube cuts off the reading-matter and every thing that might lead the eye to think it was the page of a book instead of the reality. The secret of the astonishing results produced by the modern cyclorama is along in the same line. The canvas on which the paintings are made has no visible frame nor any means of support on which the eyes may fix and decide by comparison with other well-known things. In the same way, when you see a mountain for the first time in your life, having had no previous acquaintance with such objects, the eye fails to give us a correct idea of distance, proportion, etc.]

BEWARE OF GLASS BUBBLES.

I wish to call your attention to an article in the New York *Tribune*, Dec. 28, "Beware of Glass Bubbles." I have found the same thing in honey bottles, and think it very dangerous.

Rahway, N. J. B. C. WHITING.

Since glass cans have come into such general use for fruits, less is heard about "danger in the can." Still there may be danger even in glass cans, as appeared of late when a little child was helped to freshly opened canned plums. His teeth were heard to grate on some hard substance, which proved to be a flake of glass he had broken with his teeth into bits. In a minute more, if unchecked, he would have innocently swallowed the glass, which would have caused serious injury and perhaps death. An inspection of the empty can discovered the rough edges of a broken air-bubble on the inside. Air-bubbles are very common in the cheap grade of glass of which fruit-cans are usually made, and are less noticeable on the inside than on the outside. When the boiling fruit is poured into the can these thin shells, if on the inside, are almost sure to crack off. A tablespoonful of small shot well shaken about in the can will break these dangerous bubbles and smooth their edges; better still for this purpose is a light chain dish cloth. Too much care can not be taken to wash out every particle of broken glass from the can; their small size, transparency and weight, which sends them to the bottom or sides, make them difficult to select.

MRS. J. MILLIGAN.

COMB HONEY—IS IT WHOLESOME? ETC.

Friend Root:—Allow me to ask your sympathy for the kind hands or the cook who prepares the Graham gems for the *poor* stomach. Don't sacrifice the cook; apply the 32 Gladstone rule to every solid eaten, and cease swallowing liquids. I digress, however, as I am not an "M. D." I desire to say that I am surprised to find a dyspeptic advocating the use of *comb* honey, as, in all lessons learned or teachings taught, the prime principle is that the *comb* is

indigestible. I judge, if you eat "Schumacher" graham gems for a few months the bran will be sufficient irritant for the stomach, without the comb that will not digest nor melt in stomach. There are more dyspeptics in the United States *now* than Republicans. It would be a grand scheme to induce them to live properly, even if they never recover entirely.

HENRY M. HAWLEY.

Terre Haute, Ind., Jan. 31.

[Thanks for your suggestions, friend H. Mrs. Root makes the gems only in the morning. I prefer them cold for supper. At noon we dine over at the factory with the rest of the people, and then, of course, we eat what other folks do —or, at least, we get along nicely by choosing from among the good things provided. I know there has been a good deal of teaching in regard to the indigestibility of honey-comb; but I have been eating both comb and extracted honey in considerable quantities, and I do not notice any difference, unless it is that, as a general thing, I get a more perfectly ripened article in the comb. You will notice the Bible has considerable to say about honey and the honey-comb; and the connection seems to indicate that it was then considered a choice article of food, as it is now. I know it makes a vast difference as to whether our food is thoroughly chewed or not. And, by the way, I am glad to tell you that I am not a dyspeptic, and I do not mean to be. The women-folks have been protesting so stoutly that that ladies' Columbia was *their* property that I have just invested in a new Columbia, with all the modern improvements, including that elliptical sprocket-wheel, and I tell you it is just fun to ride it, even if it is good sleighing.]

THE WHEEL—DOES A REACTION FOLLOW, AFTER USING IT SEVERAL WEEKS OR MONTHS?

Friend Root:—After reading your chapter on cycling one evening, I just wanted ever so bad to have a wheel of my own; but next morning the first thing we found was the clipping inclosed, and—well, I haven't bought a machine yet.

M. HAWKSWORTH.

Medina, Oxford Co., Ont., Can.

[The clipping referred to in the above is to the effect that, after the exhilaration and great benefit that come from the first use of the wheel, a reaction follows, the constitution is broken down, if the rider does not break his arms or legs or neck by an accident, and, all together, its advent is a calamity. Very likely there is such a thing as using the wheel to excess. There are extremes in the use of almost every gift from God. But I am glad to say, that, as yet, I have seen no ill results whatever. While visiting our daughter ("Blue Eyes") at Oberlin, where she is going to school, I sat at the table next to a lady who is a most expert and graceful rider. Said I, "Miss M., can you tell me how long this enthusiasm and exhilaration last that come from riding a wheel?" She replied, "I can only tell you, Mr. Root, that I have had my wheel three years, and I enjoy riding to-day every bit as much as I did at any time since I have had it." No one can look on while the students, both boys and girls, run their wheels over the college campus and throughout the streets of Oberlin, without feeling that it must be a God-send to enable them to get such a kind of out-door exercise after the confining duties of the class-room. The newspaper clipping referred to doubtless had in mind the racing mania that seems to be more or less connected with at least a certain class who ride wheels. I have never tried to beat anybody, and never expect to; and I certainly shall never be even one of a party who ride for prizes, even though the prize be nothing more than a bag of doughnuts.]

A CAUTION TO BICYCLE-RIDERS.

We copy the following from the Cleveland *Medical Gazette* for Jan., 1892:

As we predicted some time ago, our exchanges are filled with reports of cases of prostatitis as the result of riding a bicycle in the present abominable and ungraceful fashion. It is to be hoped that bicyclers and bicycle-makers will appreciate the gravity of the threatened and existing evil, and return to the high handle-bar and erect position.

"WHO CAN FORGIVE SINS, BUT GOD ONLY?"

Your remarks on the church (notes of travin GLEANINGS of Dec. 1), prompt me to ask a simple question; if you answer satisfactorily it will be of great benefit to the Catholic subscribers; and if not, it will most surely be a benefit to the Protestant readers. We read in Scripture, that Christ said to his apostles, "Thou art Peter, and upon this rock I will build my church; and the gates of hell shall not prevail against it." "Receive ye the Holy Ghost. Whosesoever sins ye remit, they are remitted unto them; and whosesoever sins ye retain, they are retained." "Whatsoever thou shalt bind on earth it shall be bound in heaven; and whatsoever thou shalt loose on earth, it shall be loosed in heaven." "Go ye therefore and teach all nations, baptizing them in the name of the Father, and of the Son, and of the Holy Ghost: teaching them to observe all things whatsoever I have commanded you: and, lo, I am with you alway, even unto the end of the world." Has Christ deceived the apostles? Can the church be wrong, if Christ kept his promise?

Pinconning, Mich., Dec. 22. E. BRENNAN.

Friend B., when I undertake to answer your question you must bear in mind that I am not a commentator nor even a theological student, and I am liable to make grave blunders—yes, perhaps as great as when I made my remarks about that ancient church. In the first place, I can say, most emphatically, that Christ did not deceive his apostles in the words that you quote. If you go back a few verses in that 16th chapter of Matthew, you will notice the Master had been asking his followers, "Whom do men say that I, the Son of man, am?" Finally, when the question was put directly to themselves, Peter replied in those wonderful words that are destined to go down through the ages, "Thou art the Christ, the Son of the living God." This answer pleased the Savior, and he commended him. He said, "Blessed art thou, Simon Bar-jona, for flesh and blood hath not revealed it unto thee, but my Father which is in heaven." Then follows the text you have quoted. Now, the question may be, Did the Savior mean that his church should be built on Peter, or on the wonderful sentiment conveyed in Peter's answer — namely, "Thou art the Christ, the Son of the living God"? I think his meaning was, that the church should be built upon the fact that Peter had so strongly declared. The question is before the world now as it was then—who is Jesus Christ? The Bible teaches us plainly, that, except we believe in him —that is, in the Son of God—there is no salvation for us. There are many reasons for taking this view of the matter; in fact, the last of the sentence says, "And the gates of hell shall not prevail against *it*." The italics in the last word are my own. My understanding is, that it was not Peter he was speaking of, but Peter's declaration. In your next quotation he says, "Receive ye the Holy Ghost;" and then comes

the promise that they, his disciples, *after* having received the Holy Ghost, should have power to forgive sins, to bind on earth and to bind in heaven, etc. Humanity, however, is unstable, and even Peter himself, only a little time *after* his declaration, *denied* his Master. Notwithstanding his strong words when he was with the Master and the rest of the disciples, "Thou art the Christ, the Son of the living God," he shortly afterward said, and that before a crowd of people, "I do not know the man." This he repeated, finally using oaths and curses, to make it more emphatic. Surely, the Savior could not have meant that his church should be built on any human being so weak and vascillating and cowardly as Peter. Neither does it seem to me that he meant to declare that such a weak follower should have power to forgive sins. Of course, Peter received the Holy Ghost after this event; and he may afterward have been empowered to forgive sins, for we know he performed wonderful miracles; but no such power of performing miracles has ever been granted to any descendants of these apostles, nor to any son of humanity since their time. Now, dear friend B., this is a subject outside the scope of GLEANINGS. I did not mean to take it up here, and I feel sure we had better drop it where it is. You have asked my opinion, and I have given it as well and honestly as I know how. I thank you for your beautiful texts. They are dear to my heart, every one of them, and I feel sure they are also dear to most of the readers of GLEANINGS. Should we not all be thankful that the great Father has seen fit to let each one interpret the Scriptures according to the dictates of his own conscience? "Judge not, that ye be not judged."

TOBACCO COLUMN.

CONDITIONS UNDER WHICH WE GIVE SMOKERS TO PERSONS WHO STOP USING TOBACCO.

First, the candidate must be one of those who have given up tobacco in consequence of what he has seen and read in this department. Second, he promises to pay for the smoker should he ever resume the use of tobacco in any form, after receiving the smoker. Third, he must be a subscriber to GLEANINGS. Any subscriber may, however, have smokers sent to neighbors or personal acquaintances whom he has labored with on the matter of tobacco-using, providing he give us his pledge that, if the one who receives the smoker ever uses tobacco again, he (the subscriber) will pay for the smoker. The one who receives the smoker in this case need not be a subscriber to GLEANINGS, though we greatly prefer that he be one, because we think he would be strengthened by reading the testimonials from time to time in regard to this matter. The full name and address of every one who makes the promise must be furnished for publication.

Prof. Thomas Shaw, of the Ontario Agricultural College, Ontario, the man who is fighting weeds on the farm more effectively, perhaps, than any other man just now in the whole world, also makes it his business to fight weeds of another sort. He recently paid a visit to W. I. Chamberlain, T. B. Terry, and John Gould, three men with a world-wide reputation in our immediate neighborhood; and I just want to make an extract from the *Ohio Farmer* in regard to his visit with friend Gould. Here is the clipping:

There were many things that intererested me very much at Aurora station. I will speak of but three. The first was a farmer's library, one of the finest I have ever seen in any farm home, whether we regard the books which it contained as historical, biographical, literary, or religious. This library was the outcome of twelve years of wedded life, and represented what but two cigars per day would have cost during that time. The queen of this home, before she became its queen, exacted of her lover the promise that the two cigars per day which he was wont to smoke should remain unbought, and books purchased with the proceeds. To his undying honor he has remained true to that promise. Hear my story, O ye maidens of Ohio! Do you know that, in a single generation, the power is yours to banish the weed from all your borders, and to fill the farm homes of Ohio with literature of a most helpful character?

Please send a smoker to Wm. C. Teagardin, Frisco, Ark. He has quit tobacco to stay quit; but if he should ever use it again he will pay for the smoker. He is a bee-keeper in Washington Co. MARY A. WOOSTER.
Frisco, Ark., Nov. 12.

I have been a subscriber to GLEANINGS for two years. Since I commenced reading GLEANINGS I have quit the use of tobacco. I will not resume the habit, smoker or no smoker; but as you are giving others smokers, I should be pleased to receive one as a present.
W. C. GATHRIGHT.
Cameron, Texas, Dec. 4.

One of my neinghbors, Mr. O. Goodmondsen, has subscribed for GLEANINGS, and has quit the use of tobacco. If you will send him a smoker for his pledge he will pay for it if he ever uses tobacco again. I will go his security.
Jewell, Fla. A. J. HUSKY.

Send a smoker to Mr. Wm. L. Albright, Kinderton, Fla. I think he is entitled to one; and if he should ever use tobacco again I will pay for the smoker. J. H. HILL.
Grove City, Oct. 21.

In October I wrote to you for a copy of GLEANINGS. You sent me a June number in which I saw the Tobacco Column. I have smoked and chewed for 28 years, and wanted to obligate myself to quit in some way for a long time. I quit on the 15th of October. Since then I have not used it in any form. I claim a smoker to "keep me quit," and if I use tobacco again I will pay for the smoker.
R. H. HUMPHRIES.
Morganfield, Ky., Nov. 24.

A neighbor of mine, Mr. D. C. Burton, has quit the use of tobacco, after using it to excess. If you are still giving the smokers, please send him one. He keeps bees on a small scale. If he ever commences using tobacco again I will see that the smoker is paid for.
DeLand, Ill. JOSEPH A. CAMPBELL.

Your Tobacco Column has done great good. Your little token of a pledge will often do more than a large amount. I heard a young man's mother tell him that, if he would stop smoking, she would give him fifty dollars at the end of the year. I told him of your efforts to stop the use of tobacco, and of the smoker as a reminder. Please send him one, and he will stop his smoking; if he does not he will pay for the smoker. He is a good young man, and his influence may lead others. His name is David H. Marbury, Bozeman, Ala. MRS. W. M. GRAY.
Kincheon, Ala., Jan. 6, 1893.

My father has given me a swarm of bees in one of your Dovetailed hives. I read in GLEANINGS that you give a smoker to those who have used tobacco and quit using it. I never did chew or smoke any thing except cigarettes; but pa said to me that he ought to have at least one boy who did not use tobacco. I have quit for some time, and I know I shall not have to pay for the smoker, for I know I am entirely rid of the desire to smoke, and have been for six months or more. Please send me a smoker, and I will certainly pay for it if I do use tobacco at all from now on.
Lakeland, Fla., Nov. 8. J. S. GREEN.

THE NORTH AMERICAN BEE-KEEPERS ASSOCIATION.

A CONTINUATION OF THE REPORT FOUND IN OUR ISSUE OF JAN. 15.

The report in our Jan. 15th issue ended with the address of Prof. H. W. Wiley. Considerable discussion followed the delivery of this address—not in a technical way, because no one there was competent to discuss intelligently polariscopes, right and left handed rotation, etc.; but there was some discussion with regard to the extent of adulteration, and the proposed scheme of feeding bees to make them produce comb honey. As the greater part of this discussion has already appeared in our editorial columns, we will not reproduce it here, but pass on to the address of Prof. C. V. Riley, the Government Entomologist. As the paper is a very long one, we can only make extracts here and there. After giving a brief history of the Department of Agriculture, he tells how the Italian bees were introduced by the government.

Considerable has been done by the Department, and through its agency, for bee-keepers—much more, probably, than most of you are aware of—as the published reports of the Department show. These reports, hundreds of thousands of which have been distributed very generally over the land, have surely had their influence in the promulgation of intelligent and humane methods in the culture of bees. Beginning about the time of the first edition of Langstroth's celebrated work, or nearly a decade before any bee-journal had been printed in the English language, the Department reports have, from year to year, given some notice of progress in bee culture, statistics of honey and wax production, and on several occasions excellent little treatises on bees and bee management. Notable among these is the article on the nature and habits of the honey-bee, in the report for 1857. I can not give the name of the author, as the initials only of the Chief Clerk of the Patent Office are attached to it. In 1860, Mr. William Buckisch, of Texas, gave, in an extended article, a review of bee culture as practiced by Dzierzon and his school. The essay by my old friend, Mrs. Ellen S. Tupper, of Iowa, published in the report for 1865, and covering her theory of bee-keeping, was widely read and frequently quoted, creating much interest in improved methods.

The introduction of Italian bees into this country is certainly one of the advances in American bee-culture which ranks second only to the invention of the frame hive, the honey-extractor, and the comb-foundation machine. But how many even now know that the Department of Agriculture had any thing to do with the matter? Leading text-books on apiculture are silent on this head. The fact is, however, that the first successful importation of Italian bees from their native land to America was made by the Department, and it was almost wholly from this importation that such skillful apiarists as Langstroth, Cary, and Quinby, bred and disseminated the race during the early sixties. Individual effort had, for some years previous, been directed to securing this race of bees; and in the autumn of 1859 a few queens were landed here from Germany by Mr. J. P. Mahan, of Philadelphia, on his account, and by Samuel Wagner, of York, Pa., and Richard Colvin, of Baltimore, acting together. Those imported by Messrs. Wagner and Colvin were lost during the winter which succeeded, and those which Mr. Mahan imported do not seem to have been multiplied as rapidly as the importation made through the Department of Agriculture the following spring. Mr. S. B. Parsons, acting for the Department, was in Italy at this time, making purchases of cuttings and plants for testing in this country, and an order was transmitted to him by the Department to procure some hives of Italian bees. Ten were purchased by him in 1859, and forwarded to this country in May, 1860. These were distributed among several of the best bee-masters, and they at once set about the rearing and sale of the queens of the new race. Thus it was that the Department succeeded where private enterprise had failed in this most important undertaking. Those who wish confirmation of this statement will find it in the Agricultural Report for 1859, page 543, and in that for 1863, page 530. The former is a letter written by Mr. Parsons while in Lausanne, Switzerland, and the latter is an extended article on the Italian honey-bee, by Mr. Richard Colvin, a competent authority, and who had been one of the private parties who had tried, during the years 1858–60, to import this particular breed from Europe.

The professor then referred to some length to the work done at the Government Apicultural Station at Aurora, Ill., under the management of N. W. McLain in 1885–6. He next spoke of the appointment of Prof. A. J. Cook and Mr. J. H. Larrabee, for the purpose of again carrying on an apicultural experiment station at Lansing, with all of which our readers are already familiar. We will pass on to what he had to say in regard to the appointment of Mr. Frank Benton, in '91, for a similar work. As many have wondered why the proposed expedition to India after the *Apis dorsata* failed to be carried into effect, the extract below will fully explain:

Early in 1891 I had considerable correspondence with Mr. Frank Benton, whose interest and work in apiculture you all know, and who made a personal effort to introduce *Apis dorsata*. The failure of his effort was due to over-exertion and undue exposure, and I have little doubt that, under more favorable circumstances, and with the aid of the Department, the effort would prove successful. I felt that, of all men, he would be the most desirable agent to employ in the effort to introduce *Apis dorsata*, because of his familiarity with the subject and his acquaintance with the countries to be visited; but, in addition, I had some important incidental work that I wished him to do in that connection; namely, the introduction also of certain parasitic forms of injurious insects, and particularly the introduction of the caprifig insect, *Blastophaga psenes*, to colonize in those parts of California where the Smyrna fig is cultivated. I had made all due arrangements, in consultation with Assistant Secretary Willits, fully expecting to be able to send Mr. Benton on this proposed trip, and had so economized the appropriation that there was means to do it. Mr. Benton, also, had been led to give up other plans in anticipation of this mission. The project was never carried out, however, for the simple reason that the secretary finally refused to indorse it. There seems to have been some promise made to the senator who had charge of the appropriation bill, that no one should be sent abroad, or at least this was the chief reason given for the refusal to carry out my recommendations and wishes. Professor Cook was made aware of these circumstances, and it is consequently somewhat surprising that, in a recent communication to the *American Bee Journal* (Oct. 13, 1892), he should intimate that the Entomologist felt no hearty concern for the bee-keepers' interests, and should urge that "all move in solid phalanx upon the head of the Department" in order to gain our desires and rights.

WHAT THE NATIONAL DEPARTMENT OF AGRICULTURE CAN DO FOR APICULTURE.

So far, I have indulged in retrospect, and indicated what the Department has done, or attempted to do. Let me now come to the second part of the subject; viz., What the National Department of Agriculture can do for apiculture; what it may accomplish. I sincerely hope this may be much.—will depend greatly on what sums Congress may see fit to appropriate for such investigations, and this will depend, in turn, to some degree, upon what representations as to the needs of the industry, and the possible benefits to the material interests of the country, are made to the head of the Department, to the Committees on Agriculture, and to other members of Congress by their constituents. Certain kinds of experimental work can be undertaken by individuals without serious interference with the main work of their apiaries. Indeed, it is desirable that each should experiment in a limited way, for localities differ in respect to climate, flora, etc.; in short the conditions upon which methods of management depend are so variable that each progressive bee-keeper must study to ascertain by experimentation what methods are best adapted to his own individual surroundings.

But there are certain larger fields of investigation, requiring more time and expenditure than individuals usually have at their command, and the results

of which are pretty sure to benefit apiculture, if not directly, at least indirectly. For instance, if a species or race of bees could be bred or introduced, which, in the early part of the season, when bumble-bees are few in number, would fertilize the red clover, and later in the season do the same work more thoroughly than it is now done, there is no question that we should reap a reward in the larger yield of clover seed, and in this way our pasturage would be very generally improved; so that this would indirectly affect beneficially our stock and dairy interests, to say nothing of a more general employment of red clover as a green manure in the increase of most of our crops. In cases like this the benefit would be not to individuals, but would be general, and so great that the expense of accomplishing it would be insignificant in comparison. Even an experiment which fails, and which would be disastrous to individual participants in it, would not be felt by the general government, and might serve to point out the way to success in subsequent attempts; for failure often proves very useful in pointing out the directions in which we should look for any thing valuable. Thus, if the Department, by ample effort, should prove that nothing can be gained in any given direction, it will save further disappointment to individual experimenters, and prevent a repetition of useless effort. To my mind, the character of the work to be undertaken by the department should be of such a nature as to benefit the industry in all parts of the country alike; and prominent among the subjects which it should undertake is this introduction and testing of foreign races of bees, of which there is much yet to discover, and about which our actual experimental knowledge is limited. The distribution of queen-bees of improved varieties, where they would most aid in building up the industry, might be undertaken by the Department wherever it would not interfere with individual effort in this direction. But while the lines for government action, so far as the economic side is concerned, are limited, there is a large and interesting field for further scientific investigation of the life-history of the bee, of its diseases, and of its relations to plant-life. Few of you, who do not view the economy of the bee from the purely entomological or scientific standpoint, are aware of the errors that are yet extant in connection with the subject, and are still perpetuated in many of the popular treatises on the bee, and there is no better evidence of the biologic questions yet to be decided than the discussions at such gatherings as these, which, as evidenced this afternoon, involve the actual influence of the bee on the sweets which it gathers. I am satisfied that no thorough investigation under competent direction would fail to elicit most interesting facts, and to settle many disputed points. In connection with the wintering of bees in the cooler portions of our country, there is much that remains to be investigated. The statistics of the industry have never been properly collected, and could not be, except by some national organization.

Following shortly after this address was the

REPORT OF THE COMMITTEE ON WHAT THE GOVERNMENT OUGHT TO DO FOR APICULURE.

The committee to whom was referred the matter of government aid to apiculture beg leave to report and advise that the bee-keepers of the United States ask, first, that the Section of Apiculture, in the Division of Entomology, Department of Agriculture, be raised to an independent division; second, that in connection therewith there be an experiment apiary, established at Washington, having all the appointments necessary to a first-class apicultural experiment station; third, that the appropriation for this division be sufficiently large so that the work may not be embarrassed by a lack of funds.

This is the least that we can ask in justice to ourselves. That most important branch of our business, devoted to the production of liquid honey, is in great danger of being ruined. The chief competitor of liquid or strained honey in the manufactures is cane sugar; and the recent removal of the duty on it, and the consequent lowering of prices, has materially lessened the demand for honey; and we find that we shall have to lower the cost of production in order to meet this unequal competition so suddenly thrust upon us. Millions of money are taken from the treasury to reimburse the producers of cane and maple sugar for the loss occasioned by the removal of the duty; but our legislators entirely forgot the producers of honey, whose product is but sugar with the flavor of the flowers added. We do not ask a bounty, but we do ask the government for all the assistance that scientific research and well-directed experimental work can give us in cheapening the cost of production. This is but a moiety of what is granted the sugar-men. Our industry is still in its infancy; and while many million pounds of honey are already produced, the business is capable of an expansion so great as to wholly eclipse the present production of sugar from the sugar-cane. Four contiguous counties have produced in one season over four million pounds of honey, and this represents but a fractional part of what might have been gathered. Vast as our business may become, the indirect benefits conferred by the honey-bee on the agriculturists of this country, in the fertilization of the flowers of fruits, grains, seeds, etc., will always surpass in value the honey gathered by it.

The committee have named Washington as the place for the experimental yard, because of its convenience to the Department of Agriculture; also because of the longer season in which to experiment. There may be better locations for honey, but for many purposes a poor location may be best. If for any purpose a better one is desired, such may be found not many miles out, and a part of the bees removed to it.

Should the association see fit to adopt this report, it would undoubtedly be best to have a committee estimate the necessary expense, and immediately formulate a petition naming the amount of the appropriation desired, and the changes called for, with a few of the reasons why we demand the assistance asked.

P. H. ELWOOD, J. E. HETHERINGTON, } Committee.

Considerable discussion followed the reading of this report, and it was argued by the government officials present that it was impracticable to establish a station at Washington, and that it was altogether improbable that the government would raise apiculture to an independent division. Prof. Riley said the tendency of the government was to *reduce* the number of divisions, rather than to *separate*. After considerable discussion it was finally voted to continue the committee for another year.

The last session was, for the most part, a business meeting. The election of officers, we have already given; and as there were no more subjects on the program, it was voted to adjourn in order that, the next morning, the whole convention might take in the sights of Washington.

OURSELVES AND OUR NEIGHBORS.

Whosoever committeth sin is the servant of sin.—JOHN 8:34.

It seems almost impossible that mankind can understand or comprehend the extent to which one's better judgment and good common sense are impaired, weakened, and blighted, by voluntarily doing that which we know we ought not to do. One who commits deliberate sin is like the man who goes and deliberately gets drunk; yes, and after he has done things while in a drunken state that he would not think of doing while sober, he is loth to believe that he has done these things. We all admit that the man who is angry has, to a certain extent, lost his judgment and reason. The greatest trouble is, however, we are never willing to admit that we *are* angry—that is, we are *seldom* willing to admit it. I *have* seen people who had the rare good sense to say, "Look here, my friends, I am too much stirred up now to say any thing, and I hope you will excuse me if I refuse to have any thing more to say or do in the matter until I have had a little time to get quiet, so that I may reason fairly and impartially." The man who can do this has already said, "Get thee behind me, Satan," and he has already

taken a big step from earth toward heaven. Such a man will also be wanted right and left to fill important positions among his fellow-men. He has commenced to rule himself, recognizing that "he that ruleth his own spirit is greater than he that taketh a city." Now, the groundwork toward getting this upper hand of evil is in recognizing and admitting that humanity, alone and unaided, is entirely inadequate to cope with Satan. You will notice the attitude is very, very different from that of the one who says, "I can drink or I can let it alone. No doubt it is well for some people to let the thing entirely alone, because they are *weak*. But *I* can take care of myself." My friends, the human being does not live, and never did live, who could take care of himself under all circumstances without the help of any higher power. Our penitentiaries are full of men—yes, even young men; and I am told that the majority of them are young men who boasted that they could go just so far in gambling, drink, licentiousness, or other crimes, and no further. In other words, they did not believe the proposition presented in our text, that, just as soon as one commits sin—even a little sin—he is the servant of sin, and in the bondage of sin. An illustration of what I have been saying was presented vividly to my mind a few days ago by the confession of a poor penitent sinner in our county jail.

When I first found him he was very reserved, and seemed to dislike my questioning. He smoked his pipe and read the newspaper, and answered me in the briefest monosyllables. I made up my mind he was a man who had no acquaintance with Christianity and Christian people—one who had probably been much with a rough, hard set, and, therefore, he had no relish for the conversation between myself and his fellow-prisoners. Sunday after Sunday he maintained this same reserve. I concluded that he was bearing some burden on his mind that he was unwilling to confess. I asked him about his wife, children, and relatives; but he replied very briefly. I felt pretty sure, from my former experience, that the time would come, however, when he would talk. Close confinement, especially where it comes to be solitary confinement, is pretty sure to soften, sooner or later, the most stubborn heart. When the story came out, it was something like this:

This poor man is a farmer; and he knew well what it is to try to make farming pay on rented land. He was fitting ground for a piece of wheat. It was already in good trim, but he had no wheat to sow, and no money to buy any seed. It was just here that Satan found a chance to whisper to one who had heretofore, so far as I could learn, been at least fairly honest and upright among his fellows. Near by there were some bags of wheat stored in an old log barn. The owner was well-to-do, and did not look after his property very carefully. But my friend finally yielded to the temptation, and took wheat enough from this old barn to get in his crop. It has always seemed to me as though sowing wheat were one of the nicest things to do on a farm. I like to sow seeds of any kind, but I especially enjoy putting in autumn crops that will soon look green and thrifty while every thing else speaks of death and decay. I like to see the wheat when it first pierces the surface of the mellow soil; and I like to watch it day by day as it shoots up the blade and puts out the root that it may get sufficient hold in the soil to stand the wintry frosts and the zero freezes. Very likely our friend enjoyed his work as much as I do, ordinarily. But there was no enjoyment in putting in his crop *this* time. No doubt he planned to replace the wheat, or settle with the owner, or something of that sort, after he had got his crop in on time. But after the act was done, Satan kept whispering that the man was a terribly hard and severe man, and that, if he confessed he had taken the wheat without any sort of permission, he would be punished to the full extent of the law; and so he put it off, bearing the burden of sin and guilt and remorse that was harder to bear than any thing in all his experience he had ever been called upon to bear before. He lay awake nights, and went about in a dazed sort of way during the day. Of course, he could not tell his wife—or, at least, he *thought* he could not. Oh what a foolish blunder! *He* had lost his good sense and reason; his judgment was impaired; but had he decided to confess the whole matter to his good wife, she could have told him what to do, for *she* had committed no such sin or crime. Poor fellow! he could not do it. Had he only reasoned fairly he would have seen that, at the present low price of wheat, the few bushels he had taken amounted to only a very little sum of money, after all. If the owner of the wheat were ever so hard and severe, the penalty for his theft, according to law, would not have been any thing serious; but Satan persuaded him that it would never do to confess it and unload the burden from his heart. On the contrary, he kept urging his poor victim until he got him into a far more serious trouble. This old log barn was off by itself, and it could be set on fire, and burned up—then no one would know that the wheat had ever been taken at all. After more sleepless nights and weary days he yielded to the temptation, and burned the building. Of course, an investigation followed at once; and then it transpired that the poor goaded victim of unrest had *forgotten* to restore a portion of the wheat that he had taken away but had not sown. The owner's name was found on the bags, and one clew followed another, until his guilt was so clear that he was sent to jail. Like many another, however, Satan persuaded him to keep denying his guilt, even if it were folly to deny it any further. I met him shortly after he had, after a long conflict, decided to plead guilty. The consequences were, of course, the penitentiary. But even the thought of the penitentiary, and separation from his wife and child, was so much easier than bearing that awful burden of guilt that his countenance brightened up, and he even laughed and talked so unlike his former self, I could hardly believe him to be the same man. O dear friends! does anybody know what a clear conscience is *worth?* No one knows until he has exchanged it for such a burden of guilt. I presume his natural disposition was to be pleasant, good-natured, and full of animal spirits. This guilt that had rested on his soul had borne him down so long that, when the reaction came, it was like getting out of prison. It almost brought tears to my eyes to hear him, in his poor way, tell how he had suffered, and to see him contemplate the penitentiary and separation from his home in the light-hearted way in which he did. But he was right. The punishment of the law is as nothing compared to the remorse of a guilty conscience. He had been in bondage to Satan; but had shaken off the chains of the demon, and he was now free. "If the Son, therefore, shall make you free, ye shall be free indeed."

While I had been talking and exhorting, and reading the Bible to him, without, so far as I could see, having enlisted his sympathies at all, the spirit of God's holy word had been doing its work. Said I, "And now, my good friend, are you not almost ready to choose Christ Jesus, instead of the evil one, and to become a Christian?"

The vehemence of his reply almost startled me:

"To be sure, I am ready to become a Christian. If God will accept such a poor sinner as I am, I am his already. I am going to the penitentiary to read my Bible, and to keep with Christian people as much as possible; and when it is over with, I am going with my wife to church; and if they will take a man from State's prison into the church, I shall unite with them at once."

At my request he went over all the details of his crime. He did not spare himself at all. The mental suffering and anguish he had passed through seemed to have taught him a lesson that would last for ever. God grant that it may. You know how the outside world speaks of sin and crime. You know how folks laugh at a criminal when he is caught, and say it is just good enough for him, unless, forsooth, this poor criminal happens to be a *relative* or a friend, and then, oh how different!

But now, dear reader, please, for just one moment, take another view of the case. Look at this poor friend as I was taught to look at him. He was hard pressed by the feeling that many of us know something about already. His work did not pay. Perhaps he was getting more and more in debt, and Satan seizes the opportunity to poison his mind. Instead of turning to *Christ Jesus* as the burden-bearer of the world, he turned to Satan. Should we not have some pity for such as he? When I saw how happy and bright he looked after having decided to tell the truth to some one, and escape from this horrible burden, my heart was full of pity. I thought of the Savior when he said, with his loving heart full of compassion, "Go, and sin no more." We feel pity for the man who suffers physical pain. All the skill of our best physicians, and all the arts of surgery, are employed to relieve pain; but who thinks of the pain of a guilty conscience? who thinks of the *terrible* burdens of guilt and shame that many about us are called upon to bear? and at the same time I presume they look upon the great outside world as a world with no sympathy or pity—as a world that is always ready to say, "Why, that is their own affair;" "they brought it upon themselves;" "let them take the consequences—teach them better next time;" "no more than they deserve," etc. Now, friends, if I were a dentist, and could relieve a fierce toothache in a few minutes, how glad I should be to spend my time thus in doing good! But dentists and doctors do not always cure. Sometimes they do, and sometimes they don't. Now, these burdens I have been telling you of—this mental anguish—is a hundred times worse to bear, many times, than physical pain; but there is a remedy, that *never* fails. God has chosen you and me as messengers of his to *carry* his remedy. In fact, it can not be done without us. The responsibility falls upon us. If we do not do it, it will not be done. Some one is doubtless near you now who is suffering from the torturing anguish of sin—may be crime. Are you willing to carry to him God's remedy? Are you willing to be one of God's messengers who shall say to the suffering one, "Behold the Lamb of God, that taketh away the sin of the world"? When you have once seen the new-born soul as it steps from darkness into light, you will know all about it as you never knew before. Our country needs it. Statistics have indicated that sin and crime among our young men are on the increase. Shall it be cured by more stringent laws, and by putting still more of the culprits into our jails and penitentiaries? God forbid! The jails and penitentiaries serve a good purpose. We must have them to hold and restrain crime, and to be a terror to evil-doers. But there is a more excellent way. The Bible tells us that way: "Not by might nor by power, but by my Spirit, saith the Lord;" and you and I, my friend, are God's appointed messengers to carry the glad news of the Savior, who *died* that sinners might *live*. Are you ready to take up the work? If so, go at once to the prison nearest you and inquire if some one is doing this work I have outlined. Go in the name of Jesus Christ; go and present *him* as the *friend* of sinners; and explain to these poor suffering friends and neighbors how it is that he who *committeth* sin becomes, oh so quickly! the *servant* of sin.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

HIGH-PRESSURE GARDENING, AND SOMETHING STILL BETTER.

I like the department of gardening. I have out ten bushels of winter onions, some in cold-frames, and some out. I have several thousand lettuce-plants out, some under glass, and a big lot just covered with six-cent muslin, all doing finely. I can not see much difference between the glass and muslin. I don't think a plant is missing in either. I expect to have a greenhouse some day that I can work in. I have quit my trade, and gone to gardening. I bought five acres two years ago at $150 per acre. I paid $100 down. I bought eleven more last summer. I put out 3000 raspberry-plants this fall. I have about 1½ acres of strawberries for this summer. I will put out 3 acres more this spring. I plowed the ground last fall, and it is covered with manure. I will stir it well two or three times with the cultivator before planting. I have half an acre for onions, plowed in fall, and covered thick with manure. I will raise my plants in a hot-bed. I raised some last summer, and took some to the fair; 13 made a peck. Judges said that I had bought them.

I will tell you some day how I come out on my piece of ground.

Bro. Root, I wish you could stop off here some time when you are traveling, and see my garden. Please come this way, as we have two railroads — the Panhandle and Cleveland & Marietta.

I must tell you about our meeting. We have had a revival, and 125 have been forward to seek the Lord. We have one of the finest ministers you ever saw. I thought of you Sunday morning in church. How you would have enjoyed the sight, to see so many taken into the church—all young folks, from 10 to 20 years old. Our preacher's name is Fisher, and his son preaches in your county. J. W. Nicodemus.

Newcomerstown, Ohio, Feb. 7.

[May the Lord be praised, dear brother, for the good news you bring; and I want to thank you for the great compliment you pay me in taking it for granted I should have enjoyed the sight you mention, of 125 young people being taken into the church. Why, I do not believe that even yourself, your good pastor, nor anybody else, fully comprehends what the outcome of such a work is going to be. Somebody has said lately, that our Ohio penitentiary would have to be enlarged to accommodate the *young men* of our State. Just give us a few more revivals like the one you mention, and I will guarantee that there will be a dropping-off in the "converts" for the penitentiary.

Now about your garden. I am pleased and

surprised to know that you have succeeded in making cotton cloth take the place of glass. You surely must have the cloth supported so that our heavy snows would not break it down. And then you must have fastened the frames so our heavy winds did not blow them away. I have just been purchasing more sash, because I felt so sure that cotton cloth would not answer until along toward, say, the middle of March. May I suggest to you not to be in a hurry to buy more land? What you already have will keep you busy, I tell you. Of course, I do not know how much money you have to hire help, nor how much experience you have had. But it is better to go slow and sure. You must have had something to do with that revival, even if you are not one of the new converts; and, dear brother, he who leads souls to Christ needs to be very careful that he make no failure nor mishaps in business matters. Better make garden on five acres all your life, than to undertake to manage twenty-five and even some *near* bankruptcy. We are to honor Christ, you know, by being prompt, reliable, and sure in every step we take.]

WANTED—CABBAGE SEED WORTH $20 PER LB.

The seed I have bought from you has given me satisfaction, with the exception of some Ignotum tomato seed I got in 1891. I was afraid to plant any of that variety last season on account of it. I sell all kinds of plants by the hundred thousand, and guarantee them true to name; and you can understand why I want the best seed. I have tried cabbage seed from 10 different seedsmen, and your Wakefield were ahead last season. I should like to pay $20.00 per lb. for cabbage seed, but I want it worth it. E. F. BUSICK.

Church Creek, Md., Jan. 25.

[Friend B., I would also give $20 for a pound of cabbage-seed, providing every cabbage would make a good head, and all head up pretty nearly at the same time. I have never found any thing that would do this, although seedsmen in their catalogues give us pictures of such cabbage-fields. Our strain of Jersey Wakefield, from H. A. March, I think, comes as near to it as any thing I ever had.

In regard to that Ignotum seed, I do not think we ever had more than a small quantity that was not true. My mistake was, in taking it for granted that all who received our first trial packages of Ignotum tomato seed would send to me only seed raised from the trial packet. At that time there was no other Ignotum seed to be had anywhere in the world; therefore we bought the seed back of hundreds of different individuals. Even now I am inclined to think some good friend made a mistake, rather than to think some one was tempted to be dishonest because I offered so large a price for the seed. Since then we have raised our own seed mostly. When we were obliged to buy I bought only of A. W. Livingston; and he certainly, with his life-long experience, would not make any mistake.]

THE ENGLISH POTATO ONION; ALL ABOUT THEIR CULTIVATION, PREPARING FOR THE MARKET, ETC.

Mr. Root:—You call for information in regard to the English potato onion. About a dozen years ago my father raised them successfully and to some extent. It is the peculiarity of these onions, that the large bulbs planted yield large clusters of small ones, while the small ones set out merely increase in size. The method of culture with us was as follows: The ground, well-enriched sand, was made mellow as soon as the frost was out in the spring; then the onions were set in rows twelve inches apart and six inches apart in the row. Small onions were used for the most part, with a few of the large ones to provide sets for the next season.

The earlier they were set, the better. A little cold freezing weather did not hurt them. The ground was stirred occasionally, and kept clear of weeds. In from six to seven weeks, pulling began, by selecting the largest, which could easily be distinguished, even at some distance, by the foliage. They were then from two to three inches in diameter. To prepare them for market, the roots and outside skin were taken off, leaving the bulbs white; then they were tied in bunches containing from four to six, with the tops trimmed a little. At first the wholesale price was fifty cents per dozen bunches; but other gardeners afterward crowded the market and the price fell to half that sum.

The season lasted from six to eight weeks, and then the foliage began to droop as the bulbs ripened. The length of time they remained green depended very much upon the weather, for we had no control of the water-supply. These onions were eagerly purchased, the small ones standing no chance beside them. EMILY E. WEST.

Flint, Mich., Feb. 6.

[Many thanks, my good friend, for the full and clear particulars you give us. Now, then, who among the readers of GLEANINGS has any of these onions for sale? I find them offered in some of the seed catalogues at about the price of onion-sets. If they are really worth this price in the market, what a splendid business it must be! It seems to me we ought to get some that will do for seed, for about five or six dollars a *barrel* instead of five or six dollars a *bushel*.]

A CHEAP IMPLEMENT FOR SCATTERING GUANO AND OTHER CONCENTRATED FERTILIZERS.

In regard to fertilizers, I am sure much depends on the way they are used. Even in the drill or row they should be well mixed with the soil. Roots do not and will not go into a concentrated body of strong chemical manure, as fertilizers are usually applied. Unless much rain scatters it, it's about all a loss; but if some will persist in *not* mixing it, I'll tell them a neat, quick, easy way. Punch $\frac{3}{16}$ holes, close together, all over the bottom of a 6-quart pail; nail a lath, 16 inches long, on each side (with clinch nails); nail a handle in at the top ends, and you can do more and better work in an hour than in all day the old hard way; no stoop, no back-ache; no blowing away; and it is spread even, and as wide as the bottom of the carrier. Just a little shake as you walk right along is all that is needed. I find no danger in dropping the seed right along without covering; but it pays to use even a wheel-hoe to mix it. This simple cheap rig is worth more than two men, all things considered. Ashes can be used, but the holes need to be larger. By tests I find the seed comes up better, and grows away ahead of the hand-fertilized seed, because it's so even, and covers more surface. Don't fail to try it. A pail 8 inches across is none too large, and the amount can be regulated by the motion, giving one or more shakes. E. P. CHURCHILL.

Hallowell, Me.

[Very good, friend C. Peter Henderson has again and again declared that guano and other similar fertilizers were worth fully a half more, if thoroughly mixed with as much more fine garden soil before applying to the ground. Your remarks come right in line with his advice; and from what experience I have had, I am quite sure you are right. Our plan has

been to shake the guano into the hill with a sieve; then have another hand follow with a rake, and rake it thoroughly into the soil; but even after that, I have seen the ground bake over the hill.]

IGNOTUM TOMATOES WITHOUT RAIN OR IRRIGATION.

Friend Root:—Seeing you are so much interested in gardening I will tell you just a little of our experience in that line in this land of sunshine, little rain, and less running water. We have a place in that most favored of spots, the warm belt of the foot-hills, where we have never yet seen frost enough to injure tomato-vines; but, alas! we have not a drop of water, save what comes from the heavens in rain; but there is water available for the place, if it is ever piped on to the ground. Last spring we concluded to see whether tomato-vines would survive the long drouth of summer; so we set out some 500 Ignotum vines, which gave abundance of fruit for our own use, while hundreds of pounds rotted on the ground. We picked and sold them as long as there was any market, then let them go. About a month ago they were cut back, leaving only the new shoots, with as much of the old vines as was loaded with fruit. Now, this twelfth day of January, these vines are in blossom, with quantities of green and ripe fruit, and this after having not one drop of water from May 1 till December 1.

MATTIE A. BONFOEY.

South Riverside, Cal., Jan. 12.

GLAZING GREENHOUSES; GROWING AND SELLING MUSHROOMS, ETC.

It is only recently that my wife has been interested in your Home talks. While cleaning house she came across some back numbers of GLEANINGS, and, having heard me speak so often of you, she began reading these Home papers, and now is as anxious to see GLEANINGS as I am. Should you have occasion to come to Toronto we should be most happy to have you at our home, and can assure you that no one would be more welcome. We think we could show you some things of interest — notably, a beautiful, clean, "sweet-smelling" baby.

We have about 10,000 feet of glass, devoted almost entirely to flower culture. Under the benches we grow mushrooms, and also raise Ignotum tomatoes and Grand Rapids lettuce.

I do not know how you glaze your greenhouses, but we have a system here that is being adopted by the largest and most extensive growers. Instead of using putty, and lapping the glass, a little care is taken in selecting the panes when glazing, and they are butted instead of lapped, so that they all lie perfectly flat in the rabbet of the bars. The cap is screwed on, and all is secure. We have heard it has been tried, though unsuccessfully, by some American florists. It works splendidly here. All that is necessary is a little care in glazing, to see that the joints fit well. One would naturally think that the water would drop through where the panes abut; but it does not nearly so much as in the old system of glazing; and, besides, when it freezes on the inside of the glass it seals the whole thing over perfectly air-tight; and unless the joints are badly made one can not find a crack anywhere.

I should like you to have seen a mushroom-bed we had bearing a while ago. I think you would have wanted to go in for mushroom-growing. To give you an idea of how people in Toronto appreciate mushrooms, I will give you an incident that came under my notice recently. A farmer brought to the market a basket of these, in all about 3 pecks, and sold them to a dealer for 75 cts. I bought them from the dealer for $3.00, and, after selling some of them for $2.25, disposed of the rest to another dealer for $3.00, who, in turn, sold them to a restaurant for $4.00. The farmer had gone home happy at having received 75 cts. for a few mushrooms which he had found growing wild.

Toronto, Can., Feb., 1893. E. GRAINGER.

[Thanks for your kind invitation, friend G. Should I go to Toronto again, I shall most assuredly make you a call. We have tried considerably laying glass as you indicate; but unless the slope is considerable, as it would be in a greenhouse, we have found that the water drips through the cracks between the glass. By setting the edge in liquid putty, however, before pushing the glasses up tight together, we have made a beautiful tight job. The joint is sanded before the putty gets dry. At the same time, we sand the putty along the edge of the glass.]

SPRAYING APPLE-TREES; REPORT FROM THE OHIO EXPERIMENT STATION.

So many inquiries have come in regard to the matter, we have decided to submit the following:

The heavy and continued rainfall during the spring and early summer of 1892 is thought by many to be the direct cause of the failure of the apple crop. No doubt this was true in many cases, as, when heavy rains occur at the time of blooming, the pollen may be washed away, and pollenization prevented. The bees, not being able to fly at such times, can not visit the blossoms, which fact alone is sufficient to account for the crop failure, in a great measure.

The opinion has been held by a few, that unfavorable weather is not, in all cases, the direct cause of failure; and some experiments, carried on by the Ohio Experiment Station, strengthen this opinion. An orchard of Newtown pippins, of nearly two hundred trees, was divided off into plots, none of the plots containing less than one row, and some as many as four. Several compounds were used; but the fact that some adhere to the foliage better than others renders comparison out of the question, nor is this matter of any importance in this connection.

The dilute Bordeaux mixture, which was found to be best last year, occupied the same place this season. The ingredients used in this mixture are sulphate of copper, 4 pounds; lime, 4 pounds; water, 50 gallons. Comparing the two plots where this compound was used, with the two unsprayed plots, the astonishing fact was observed that no marketable fruit could be found on the unsprayed plots, nor was there much fruit of any kind; while on the sprayed plots, which had been subjected to the same unfavorable climatic conditions, there was about half a crop.

There was sufficient bloom in the orchard for a full crop; and if we accept the old theory of crop failure in time of wet weather, we are forced to the conclusion that spraying aids pollenization, which is absurd. We are, therefore, forced to seek some other hypothesis. The most reasonable explanation that can be offered at present is that spraying prevented the apple-scab from attacking the young apples and blossoms. It is well known that scab attacks apples in all stages of growth, and that, if it appears very early, it may cause the young fruit to drop prematurely. When it attacks the blossoms, it of course destroys them. The first spraying was done before the trees had bloomed, and the supposition is that many of the fungus spores were thus destroyed and the apples were thus given a chance to develop. This theory is tenable, and consistent with well-known facts; but it must be admitted that a more careful study of the question is needed before it can be settled beyond controversy. This experiment also strengthens the theory that early spraying is essential to the best success in preventing the apple-scab.

The spores from which the scab-fungus develops live over winter on the trees, and begin growth in the spring at the same time the leaves start to grow. How rapidly the fungus develops, depends upon the weather. It follows, then, that the apples would be attacked earlier some seasons than others,

and it may not always happen that early spraying would show such striking results as above mentioned. It is true, however, that the fungus is prevented much easier than it is killed after once established, and to this end early applications of fungicides are far more effective than late; and it may sometimes happen, as in this case, that a crop is saved which would otherwise be lost.

No dates can be named for spraying; but a good plan is to make the first application just before the leaves open, and the second soon after the blossoms fall, at which time four ounces of Paris green should be added to each fifty gallons of the mixture, in order to kill the apple-worm. A third spraying with the combined mixture is to be given about ten days later, and still another after the same length of time, in case of continued wet weather.

NOTES OF TRAVEL

FROM A. I. ROOT.

THE HORTICULTURAL INSTITUTE AT JACKSON, MISS., ETC.

In our issue for March 15, of a year ago, I told about my visit to the home of J. W. Day, the author of the tomato book; but I did not tell you *all* about that visit. When I first arrived at Crystal Springs, Miss., they told me that friend Day was at Jackson, Miss., attending a horticultural institute; and it did not take me long to get on the train again and push ahead for Jackson, the capital of the State. It is a town of about 6000 inhabitants. The capital cities of the States in the South are not as yet able to compare very favorably with the capitals of Ohio, Michigan, Wisconsin, New York, and some others that I have seen. Of course, it is not to be expected; for agriculture, manufactures, etc., are not yet developed in the South as they will be a few years later. The people, however, are getting a good deal of enthusiasm, especially in the State of Mississippi, and a good work is going on rapidly in adjoining States. The buildings, although tasty, are small compared to ours in the North, and built mostly of wood. We should remember that, in these warm climates, it is not worth while, and it would not be in good taste, to make such preparations against the severity of the weather as we are obliged to make here in the North. The hotels of Jackson are very fair, although they were not built with the view of accommodating any such amount of custom as we often have here at the North.

The horticultural institute occupied the greater part of two days. In order to get the people out, and give the meeting enthusiasm, some noted speakers were invited from the North. In fact, Gov. Hoard, of Wisconsin, acted as chairman, and J. M. Smith, of Green Bay, Wis., was one of the principal speakers. The meeting was much like one of our real live farmers' institutes here at the North. Some colored students from one of the neighboring colleges gave us beautiful music; and Gov. Hoard was more than bubbling over with his many odd incidents, jokes, and funny stories. Every little while he would get up and say, "The remarks of the last speaker remind the chair of a little incident;" and pretty soon this preface to his story got to be so well recognized by the young Mississipians that they cheered him beforehand. In fact, there would be such applause before he began his story that it was hard to get them quiet so that he could tell it.

In the South, everybody raises cotton, very much as everybody raises wheat here in the North. They have fallen into a kind of rut. They know how to raise cotton, and don't know how to raise any thing else, and so they keep going through the motions, year after year, in a sort of automatic way. It does not matter at all whether the streets of New Orleans, or the public squares, are so filled up with cotton bales (as they were when we were there) that in many places one can hardly get through, or not. They just keep right on raising cotton. Our Northern friends, Smith and Hoard, and others, of course protested against this sort of farming. Friend Day is a bright example of intelligent Yankee figuring and planning. I have told you how he engaged in the great tomato industry. I did not tell very much, however, about the *peach* industry that he is so deeply engaged in. If I should tell about the size and lusciousness of the peaches, the immense crops they get, and the prices the peaches bring in the North, you might all start on a stampede for Mississippi to raise peaches. Well, one of Gov. Hoard's incidents was something like this. He said that, while in the service, a colored boy who was waiter for one of the generals was so afraid of the booming of the cannon that he kept his ears stuffed full of cotton. As a consequence, he could not hear very well. One day the general gave him orders as to what he was to do; but, as usual, he did not do it. Pretty soon he was called up.

"Look here, Sam; what is the reason you don't do as I tell you? You certainly heard me, for you nodded your head when you spoke, as if you understood."

"Well, the fact is, I did hear you tell me something, but I could not hear very well just what it was. How can a poor nigger tell *exactly* what is said to him when boaf eahs am stuffed full ob cotton?"

Our Mississippi friends saw the point of the joke, of course, and they almost raised the roof with yells and cheers. The greater part of the friends in the South—colored men and all—have for years had their ears so full of cotton that they could not see nor understand any thing about peaches, tomatoes, early garden-stuff, nor any thing else. Most of the incidents that Gov. Hoard mentioned were from the late civil war; and some of his stories cut so close that some of the veterans near me, who once kept slaves, were inclined to double up their fists and show fight. Friend Day, however, exhorted them to be gentlemen, and to take a joke when it is intended as a joke.

To vary the exercises, some native colored minstrels, who probably had not had an over-amount of schooling, were called up to give us some native melodies, accompanied by the banjo, violin, guitar, tamborine, etc. They did it grandly, but somebody thought it was a good time for "Dixie's Land." Others suggested that, out of respect to their Northern friends, they should not have Dixie's Land just then. But the crowd clamored for Dixie again and again. Then somebody suggested Yankee Doodle, to kind o' bring things level. At first, some demurred, as before; but the call for Yankee Doodle was persistent; and even the Southerners themselves, one after another, fell into line and demanded that we have Yankee Doodle also, if for nothing else than to let the Northern people see that the Southern folks could be generous, especially while they were entertaining guests; and finally a great hurrah arose from hundreds of voices for Yankee Doodle; and it ended up with a big hand-shaking between the North and the South. When it looked as if there might be jangling over old-time troubles, I know at least one individual in that big crowd who did some most earnest praying. May be there were a good many earnest prayers sent up at just this crisis; and the prayer was answered.

I do not know that I ever enjoyed any horti-

cultural meeting much more in my life. Friend Day, as a matter of course, was backward about taking part, and telling what he could tell so much better than anybody else. I say, "as a matter of course," for it is a lamentable fact that the real skillful, intelligent, and successful cultivators of the soil—the real experts and old wheel-horses in nearly all rural industries—are very modest men. A good many of them think they can not talk. The reason is, they have all their lives sat in the background, and so have got an idea that they can not help in such gatherings. Of course, that is not one of my troubles—not now, anyhow. In fact, I am afraid I have sometimes pushed myself forward a little *too* much. As the program was already quite full at this gathering, I decided not to say any thing; but I am sorry now that I kept still. I came in during the middle of the exercises, and there was not much time for introductions; yet I am now sorry that I did not crowd in with at least a few brief remarks. There was something in my mind that I wanted to say to the four or five hundred people there assembled. Well, there is one consolation—I can say it yet to perhaps twice as many thousands; but I wanted the Southern people especially to hear it. I wanted the colored boys of that horticultural meeting to hear what I had to say. I am now going to give my little speech here; and my good friends in the South may scatter it about. Here it is:

Mr. President, Ladies and Gentlemen, of this Horticultural Society of the State of Mississippi:

In Ohio, where I came from, we have a man whom we delight to honor. Not only does the whole State of *Ohio* delight to honor him, but the whole *United States* is beginning to do so; and before he dies we expect him to be held in grateful remembrance by the people who till the soil, from all over the world. His name is Terry. He is teaching the people of the North how to raise potatoes; and not only *more* potatoes, but *better* ones than the world ever saw before. Now, dear friends, you have a man here in the South, right in this State, in this county—yes, here in this *room*—who is in a like manner teaching the Southern people to raise tomatoes—better tomatoes, and more of them, and earlier in the season—than they have ever had them before. In fact, he has developed a great industry where nothing of the kind was ever known before. You doubtless looked out of the car windows, as you came here to this gathering, and saw the white cotton sheeting that covers the hot-beds. In fact, these cloth-covered hot-beds are at this very moment dotting the landscape with this very industry until it calls forth question and remark from the traveler who passes through on your railway trains. The man you are neglecting and overlooking is my good friend J. W. Day. I know we are told in the good book, that "a prophet is not without honor save in his own country;" but with all due respect to my good friends Gov. Hoard and J. M. Smith, and others who have come from the North to talk to us, I want to remind you that you have home talent that needs recognizing and encouraging. Now, boys, there has been a good deal of cheering here to-night. I want you to give three rousing cheers for the home talent of the State of Mississippi. May God bless you all.

After the meeting was over we adjourned to our lodging-places. The unusual number of visitors in the little town of Jackson was so great the hotels and boarding-houses were full, and extempore beds had to be rigged up all over the city; and it was my exceeding good fortune to be permitted to sleep in a bed with friend Day, and this bed was only one of half a dozen or more that occupied the same room. As the weather was a little frosty, a big blazing fire of pine knots was kindled in the spacious fireplace, and we all got around the fire and told stories. Friend Day was inclined to apologize a little for the way he entertained a Northern visitor; but I look back to that evening, and the friendly chat we had by the fireside there, as one of the most enjoyable evenings of my life. It gave me just the glimpse of the Southern people and Southern customs that I wanted. Most of the friends who sat around that fire had been slave-owners in former days; and they were just as free to talk it all over, and tell stories, and answer any questions I might ask, as if they had been my next-door neighbors all their lives. Of course, there was fun and merriment; but there was a real hungering and thirsting after righteousness. The matter of the morals of the colored people was discussed; their value as farm-hands and mechanics; their capacity for education, etc.; and the report I received was certainly encouraging. I know there are drawbacks—terrible drawbacks; but, my dear friend, there are drawbacks with the white people too. It took a good deal of hard, earnest work, and much patient forbearance—much kindness and long-suffering—on the part of earnest Christian workers before you and I were brought into the fold of Christ Jesus.

These horticultural meetings and farmers' institutes are going to be great agencies for good among the colored people. A great part of them take kindly to gardening, fruit-growing, and kindred pursuits. I have no idea *how* many features of the problem are to be solved; but I am sure that education, manual training, etc., are right and proper at the present stage.

I did not get a chance to shake hands with Gov. Hoard; but I wish to say a word of encouragement to him, if he will accept it; and I want to suggest to the good friends of the State of Wisconsin, that, if they have not already thanked God for such a bright, happy, and, at times, almost inspired leader in the cause of agriculture and every thing else that is progressive and good and pure, they want to do it now. Our friend Smith, who had the wisdom and good sense to take his wife along when he went down among the Southern people, also deserves a vote of thanks. And we may thank God that he, too, has been raised up at a time so opportune—that is, when there is such a general disposition to say that farming does not pay; we may thank God that J. M. Smith has come on to the stage to show us that intensive agriculture *does* pay, and pays *tremendously*, where one gives it brains and energy—the same kind of brains and energy that are given to almost all callings to make them successful. Not only in the North is it possible to make agriculture pay; but industries are springing up here and there all over the Southern States that are enough to startle the whole world. There are possibilities along this line, and possibilities, too, that people right in these very neighborhoods never dreamed of. Let us get the cotton or wheat, or whatever else it may be, *out* of our *ears* and *eyes*, that we may *see* and *hear*, and profit by seeing and hearing.

I was very much interested in an address on growing strawberries in and around Crystal Springs; and the speaker had in his hand a box of ripe berries while he spoke. They do occasionally, in favored localities, get a few strawberries in February; but it seems to me as if they must be something a little irregular, about like the small crops of berries we sometimes get

here in the North in the month of October. I was especially interested in an account of an immense crop of strawberries gathered in only six weeks after setting the plants in the ground. It was done by selecting the strongest plants with the largest fruit-crowns, taking some of them at a time when they were so far along as to show occasionally a blossom. These were set in very good ground, and given extra cultivation, and made a fine crop in the time I have mentioned. Of course, all runners were kept off. During the past season I myself succeeded in getting something of a crop in just about the same way. Of course, the wet weather was against it. By moving the plants with the transplanting-tubes, I think it could be made quite a success, when we learn by careful experiment just how to manage.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.
Illustrated SEMI-MONTHLY
36 PAGES 7×10
$1.00 PER YEAR.

Blessed are the pure in heart, for they shall see God.—MATT. 5:8.

THE pure in heart shall not only have a clear, unbiased understanding, but they shall have wisdom given them from on high; while "he that committeth sin is the servant of sin."

BE sure to read Langstroth's Reminiscences in this issue.

THE demands upon our space are so great that we are obliged to add eight extra pages.

THE *Progressive Bee-keeper*, published at Unionville, Mo., is again making its regular monthly visits. It is a good paper, and we should have been sorry to know that the heavy loss by fire which it sustained was too much for it.

OUR bees are wintering nicely so far, and only four are dead this exceptionally cold weather. Two of this number were very weak in the fall; but summer is not here yet, and we won't count our chickens till then. So far the winter cases appear to be doing as well as the large chaff hives. As to the hives with sealed covers, the difference appears to be a little in favor of the sealed-cover idea.

WE hope the Rambler will urge upon the bee-keepers of California the necessity of joining and supporting the Bee-keepers' Union. That the bee and fruit men in that great honey State are and have been coming into conflict is becoming painfully evident. See Rambler's article in this issue. There never was a greater need for the Union than now; and unless it has a large membership it will fail of a great work.

WE now put up all our sections by the thousand, in potato-boxes holding just a bushel and a half, and worth about 25 cents alone. Instead of having a useless crate lying around as formerly, the purchaser of our sections will have a useful implement. Even if he does not live on the farm or raise potatoes, the potato-box crate will be very handy for storing apples, potatoes —in fact, any sort of vegetables—in the cellar. This is in the line of the request of Dr. Miller and others, that supply-dealers make such boxes and crates as will be useful for *other* purposes after they have subserved their first mission as a carriage crate while in the hands of the railroad companies.

IN one of our exchanges a writer thinks GLEANINGS has not given enough attention to that fearful bee-disease, "bee paralysis." It really seemed to us, if it did not to many of our readers, that we had allowed the discussion to proceed to an *ad nauseum* extent. No new or peculiar development has occurred, except in the case of J. A. Golden, and in our next he will answer some questions in regard to it. It is evident, as Dr. Miller says, that in some cases the disease appears to be much more aggravated and serious than in others. Why this should be so we can not say, for all the dead specimens of diseased bees that we have examined from all parts of the country appear about the same; viz., swollen, hairless, with a general greasy appearance.

WHERE bees have insufficient protection, or were neglected last fall, the indications are, from the letters, that there will be great losses. Colonies that were properly cared for will winter well. We are afraid there are too many of the former class, as so many bee-keepers have been sort o' neglecting their bees in the fall because the winters of late have been comparative mild. It is always safer to prepare for a cold winter every fall. It is rather poor policy to send a hundred or so dollars to your supply-dealer, and then lose all your bees the following winter through neglect. It is bad enough to have a series of poor seasons; but there is no excuse for cutting down the small profits by winter losses through carelessness.

HONEY CARAMELS.

OUR veteran friend in introducing honey to the people in popular packages, C. F. Muth, has sent us a sample package of honey caramels. We passed them around, and they were gone so quickly that Ernest, it seems, did not get even a taste of them. They are pure honey, without question, and friend Muth has succeeded in giving us a honey confection that is just as neat and clean to handle as the best and finest candies to be had. We have been waiting, thinking he would give us prices. They certainly should be advertised through the bee-journals, any way. My opinion is, that honey candy will be found to be more wholesome than even candies made of pure sugar; and you know that, sometimes, we do not get the pure sugar. A. I. R.

OUR BRITISH COUSINS AND THE NORTH AMERICAN.

THE British bee-keepers are making extensive preparations for a grand honey display at the World's Fair. If we don't look out, Canada and England will "beat us all to smash." We are glad that our Canadian and English cousins are coming over, and the bee-keepers of the United States mean to give them a hearty welcome. We hope a large delegation from both countries will be present at the next meeting of the North American, at Chicago. It is expected this will be the largest and grandest meeting in the history of the association. Let the date be fixed early, that all may be making their calculations. It was approximately fixed for *about* the middle of Octobor, at the Washington meeting.

A FEW HARMLESS LIES ON THE BEE.

THAT old canard that originated somewhere over in Canada, that bees use their sting as trowels to cap honey, etc., is still trying to go the rounds of the press. It gets a little encouragement, hence it is kept alive. There is another yarn of the same ilk, to the effect that flying bees often carry little tiny stones to prevent the heavy winds from blowing them away;

then the reporter tried to moralize on it, and adds, "Here is a lesson on what we ought to do." Do what? Can any sane person tell us? We might add that the probable foundation for the story is pollen on the bees' legs. Friend York, in the *American Bee Journal*, says that a statement is made in a religious journal, that "two larvæ, the drone and the worker-bee, placed together in the queen-cell, will so blend as to develope an impregnated queen-bee." This is on a par with the stupid nonsense given out years ago as science by Professors Agassiz and Tyndall, wherein they tried to show how the bees made honey-comb by scooping the cells from *chunks* of wax. Such lies are harmless, but they disgust practical bee-keepers, and *we* are heartily tired of trying to refute them.

A couple of years ago, when we visited at the home of the Dadants, during the International convention, we met one of their faithful employes—one who had been with them for many years—a colored man by the name of John Hammond. John's open and honest countenance showed that he could be trusted with important duties, and he was. When we came to bid good-by to the Dadants, we shall never forget the kindly hand-shake of John. A few days ago we received a letter from the elder Dadant, accompanied by a newspaper clipping, to the effect that this same John had recently got track of his mother, whom for 36 years he had not seen or heard of; and who, to his great joy, was still living, and that he was now to take a trip to the South to see her. The article winds up with this touching paragraph:

Try ot imagine, if you can, that you have found your mother after thirty-six years of ceaseless search, and then anticipate the joy that will come to John and his mother on Christmas day.

BEE-KEEPERS' UNION, AND THE RESULT OF THE VOTE.

The General Manager has kindly furnished us the following:

OFFICIAL STATEMENT.

Chicago, Ills., Feb. 3, 1893.

To the Members of the National Bee-keepers' Union:

I hereby submit the following statement of votes received up to the time of closing the polls, on Feb. 1, 1893. There were 348 votes cast.

For President.—Hon. R. L. Taylor, 141; James Heddon, 136; scattering, 50; blank, 21.

For Vice-Presidents.—C. C. Miller, 272; G. M. Doolittle, 270; A. I. Root, 265; A. J. Cook, 242; G. W. Demaree, 228; scattering, 248.

For General Manager, Secretary, and Treasurer. Thos. G. Newman, 321; scattering, 3; blank, 24.

For Amended Constitution.—289; against, 28; blank, 31.

For Salary of Manager. 20 per cent, 342; scattering, 6. Back salary voted, the years being added together, amount to 566. This, divided by the number of votes, lacks a little of being twice—carrying for one year, and leaving votes for 218 over. It will, therefore, commence with Jan. 1, 1892.

Thomas G. Newman,
General Manager.

All the members of the new Advisory Board are a unit on the matter of suppressing glucose adulterations of honey, and they will soon be ready for business. But for the unfortunate convention speech of Mr. Heddon, there might have been a thousand members; and now that the Union is reorganized with an efficient corps of officers, there is no reason why any one should hold back. Let the list swell up to a thousand. Send in your name, with one dollar, and you will be entitled to all the rights and privileges of the organization, besides helping to suppress honey adulteration. To deal with this great question of adulteration, the Union must have a larger membership. There are many who, *expecting* to carry out the line of these suggestions, will put it off. Don't do it.

HONEY-PRODUCING LOCALITIES OF THE UNITED STATES.

It has been evident for some time, that the honey-producing localities of the United States were narrowing down. The great pasture lands, with their abundance of white clover, either have been or are now being turned into extensive fields for the cultivation of agricultural crops. Basswood is being cut away at such a fearful rate, by furniture-dealers and others, that in a few years there will be only a few localities where much basswood honey may be obtained. But, happily, there is another side to this. Alfalfa is just beginning to develop in the West. If its cultivation continues, as we have reason to believe it will, it will more than make up for the loss of honey from white clover, both in quantity and quality. Besides this, there are certain mountainous districts in California that are absolutely unfitted for any form of agriculture. These will probably always be wild; and in these places the mountain sage and other honey-producing flora will continue to flourish. Again, there are many other places in the United States, east as well as west, that would make valuable locations for bees, that are not yet discovered. But the time will come when their golden sweets will no longer go to waste. The *quantity* of honey will increase, although the *area* from which honey may be gathered may be lessened.

THE EVOLUTION OF THE LANGSTROTH SYSTEM.

Elsewhere we present a picture showing a rear view of some of the buildings that comprise a part of our manufacturing bee-plant. In the foreground is a part of the apiary; and conspicuously in front will be seen the figure of an old gentleman. It is no other than our old friend the Rev. L. L. Langstroth. He is standing in the apiary, and in front of the buildings from which the Langstroth hive and system have received such wide publicity and popularity; and as the combination, one that we probably could never make up again, was not altogether an inappropriate one, we concluded to preserve it in permanent and tangible form, and requested our old friend, one pleasant afternoon, to sit near one of the hives, while we, with a camera, took the view. He kindly did so; and it is with pleasure that we present the result. If it was a gratification to him to witness the outgrowth of his invention, we trust it will be equally so to his admirers.

The first building shown in the view is the machine-shop, which we erected in the summer of 1890. It is in this that the comb-foundation machines, extractors, and, in fact, all the metal work, all after Langstroth sizes, are made. At the right is a partial view of the wood-working building, where hives, frames, etc., after the Langstroth dimensions, are turned out by the carload. Back of the machine-shop, and shut off from view, is the packing and storage building; and at the extreme left a partial view of the office, together with the water-tower, wherein one of the Grinnell tanks is stationed ready for fire purposes. In this vicinity are four buildings, two story and basement, each about 40 x 100, all with metal roofs, and solid brick from the foundation up. Of course, the tall chimney stands directly over the boiler-house and engine-room. This does not include all of our buildings, but it shows fairly well the evolution of the Langstroth system: and while our bee-plant, large as it is, sends off hundreds of carloads every year, of

bee-supplies, on the Langstroth system, there are other establishments that are doing their share; and as we think of the results that have followed the invention of the Langstroth hive and frame, it will be interesting to read just exactly how this invention came about. All this, and more, Mr. Langstroth tells in his usual charming manner on page 116. Be sure to read it.

A VISIT TO H. R. BOARDMAN.

We used to call him "the man who never loses bees in winter," and I rather think he is going to come through the present severe winter as usual. It was my good fortune to spend a couple of days at his home while attending a farmers' institute. He winters his bees mostly in long narrow buildings above ground—see page 319, April 15, 1889. I do not think I ever saw a more tidy and pleasant apiary; and his tasty little home is just in keeping with the apiary. Of course, friend Boardman is somewhat of a gardener, for he could not very well be a particular friend of mine without at least having the subject well presented to him. Now, he has some cold-frames and glass sashes. Instead of his sashes being 6 feet long, however, they are only 4. When I commenced remonstrating, he said: "Look here, friend Root; I have no boys of my own; and a good many times there are not anybody's else boys handy; therefore I adapt my tools and implements to the circumstances." Then he picked up one of the four-foot sash, took it off the hot-bed, and put it back again with ease. There were no vegetables under the sash, for it was about the first of February; but what do you think we did see? Why, White Brahmas and Plymouth Rocks, scratching and having fun right under the sashes, and laying eggs every day right straight through the winter. His beds are pretty nearly as wide as the regular hot-bed—say about 5¾ feet inside; and to make his sash "catch on" he has a one-foot board along the north end and another along the south end. These boards are nailed down permanently, so when he handles the sashes all alone he has a one-foot platform to rest on while he is swinging them up on one corner. The arrangement is much like the new celery-culture bed you saw in the picture on page 26.

Friend Boardman is an enthusiast on sweet clover, as you may remember. He raises it by the acre every year, gets honey from it for the bees, and food for his Jersey cow and horse. Said Jersey cow, and horse too, will take sweet-clover hay in preference to any other kind of hay or clover you can give them. They are educated to it; and they will even reach for the dry seed-stalks, and chew them up with avidity, if you give them a chance. He keeps his ground seeded permanently to sweet clover by letting the seed drop on the ground and come up of itself. But he says it is quite a hard matter to get a good stand by sowing seed in the first place. The plant seems to have a queer fashion of growing better on hard roadsides and hillsides than it does on fertilized ground.

I can not begin to tell you of all the things we went over in regard to bee culture and gardening; but my impression is, that friend Boardman is one of the most thoroughly posted bee-men we have living at the present day; and it is not theoretical only, for he practices as well as talks, and succeeds in his practice. He has made quite a fair crop of honey during this past season, when everybody else for miles around him has made an utter failure; and, by the way, there are some very nice people around East Townsend, Huron Co., O., besides friend Boardman. A. I. R.

SPECIAL NOTICES.

LEE'S FAVORITE POTATOES.

Have any of our readers any of the above? If so, how many, and what do they want for them? Just now there seems to be a demand beyond the supply.

JAPANESE BUCKWHEAT.

It is a little early in the season for this; but we should like to be getting in a larger supply of seed than we have ready for the season when it comes. If any of our readers not too far distant have a supply of seed for sale we should be pleased to receive samples and offers.

POTATO ONIONS.

Since our remarks on another page, in regard to potato onions, we have found where we can get some so as to sell them as low as a dollar a peck. May be some of our friends, however, will furnish them so we can do a great deal better than this. Price 15c per quart; by mail, 25. If the subscribers of GLEANINGS can not furnish potato onions cheaper than this by another season, it will be because there are not any good onion-growers among us.

ONE-POUND CARTONS CHEAP.

We have secured a lot of cartons, or pasteboard boxes, for 4¼ x1⅞ sections, *without* tape handles, at a low price, so that we are able to offer them at $1.00 per 1000 less than the prices given in our catalogue for cartons *with* handles At this rate the price would be, without printing, 100 for 50c; 500 for $2.25, or 1000 for $4.00. Larger quantities at a lower price. Orders may be sent here or to F. A. Salisbury, Syracuse, N. Y., if more convenient. These are not inferior in quality in any way; but the factory got 25,000 made up without tapes when we ordered them with tapes, and they could not put tapes in afterward without great expense; hence we got them at our own price.

ALSIKE CLOVER SEED.

We are getting now for choice alsike seed, $10.00 a bushel; $5 10 for ½ bushel; $2.60 per peck; 22c per lb. Peavine and common red have been advancing so that they are now worth $1.00 a bushel more than alsike. As it takes only half the amount of the latter to seed an acre that it does of the large seed, the high price of the latter is bound to stimulate the demand for alsike, and we may have to advance the price of this before the season is over. Now is the time for seeding in some localities; and during the next six or eight weeks, as you get further north. If any of our readers have a surplus of choice seed, we should be pleased to hear from you, with samples, and the price at which you hold it.

HOT-BED SASH.

As one of our near neighbors has a lumber-yard and sash-factory, and makes a business of making hot-bed sash, we may be able to help you by furnishing you with a *sample* of just the kind we prefer, if nothing more. One sample sash, without glass, size 6 feet by 3⅓ feet, 1⅜ in. in thickness, 75 cts. In lots of six, crated together, 70 cts. each. The same painted and glazed, single sash, $2.00; 5 crated together, $1.75 each. However, we do not recommend them to be shipped with the glass set; and we could in no case be responsible for breakage. Better buy your glass by the box, and paint and glaze them where they are to be used.

COMB FOUNDATION AND MACHINES.

We have just supplied the W. T. Falconer Mfg. Co. with an outfit of four of our foundation-machines for making the different grades of what they style the "Falcon" brand of foundation. We furnished them also a power-frame, whereby they can run their mills by steam power, as we do in the manufacture of foundation. If they are careful in purifying their wax, they are in a position to furnish foundation equal to that we are now sending out. That is saying a good deal. If you don't believe it, send for a sample of our foundation and see for yourself. There are two reasons why our comb foundation is so superior. One is, that the wax is all purified and made a bright yellow, or corn color, even for brood foundation, before it is made up into foundation. Another is, that the mills we are now turning out

are much superior to those we made even a year ago. They are simply perfect in workmanship, and we renew them often in our wax-room, so as to have perfect foundation. Our trade in this is increasing because of its decided merit.

NOVICE EXTRACTORS CHEAP.

We have at Northville, Mich., an old-style Novice No. 5 extractor for L. frame, almost new, and with extra space below the reel, worth new about $8.00; will sell for $4.50. We have also in our store at Syracuse, N. Y., several new extractors, with the old-style Novice gear, made one to two years ago, and worth $7 to $8. To close them out to make room for new stock, we will sell them, while they last, No. 4 or No. 5, at $5.50; No. 7 or No. 10 for $6.50. Our catalogue gives the size of frame that each number will take. You can send your order to us or to F. A. Salisbury, Syracuse, N. Y.

CARLOAD SHIPMENTS.

Since we last reported, we have shipped the two carloads of supplies to California, to Messrs. G. G. Wickson & Co., of San Francisco and Los Angeles, to whom we refer our California friends in need of supplies. We may make up another carload to one of these points early in March, so that, if there is any thing needed that we have not already sent out, communicate your needs early, either to us or the above firm, so we may be able to supply you.

We have also sent a carload of hives and supplies to John Nebel & Son, of High Hill, Mo., to whom we refer bee-keepers in that section.

We have shipped a carload containing a pretty full assortment of supplies to H. G. Acklin, 1024 Miss. St., St. Paul, Minn., to whom we refer bee-keepers in the Northwest who are in want of our goods.

We have shipped another carload to Jos. Nysewander, Des Moines, Iowa, the hustler in bee-keepers' supplies for the Central West.

While this is going to press we are loading a car for Rocky Ford, Colo., for Henry F. Hagen, who represents us in Southeastern Colorado.

We are also loading two carloads for our eastern branch, at Syracuse, N. Y., where F. A. Salisbury has charge. Bee-keepers in the vicinity of any of these depots will do well to write to the address nearest you for prices, and a list of goods on hand. When you write, tell what you need.

While we are about it, we might as well add that W. S. Pouder, of Indianapolis, Ind., wishes us to say that he will keep on hand our Dovetailed hives, Cowan extractors, and a general line of bee-keepers' supplies.

We expect to load soon another car for W. K. Ball, Reno, Nev., the man who sent us a carload of such nice white alfalfa comb honey, produced in the Dovetailed hives.

STILL ANOTHER BOOK ON ONION CULTURE.

This one is by our good friend Greiner, who gave us recently "The New Onion Culture." It is more important, because it includes both the old and the new. After looking at the pictures, and reading it through, I began to conclude that Greiner is one of the best men in the world to tell us about rural industries. Every page of the book indicates clearly, also, that he is a practical worker, and loves to see things grow. I do not know but he has really fallen in love with the whole onion family. If so, then there are at least *two* of us. The only fault I have to find is, that there is not enough of it. For instance, when he comes to the subject of potato onions and multipliers, he gives us just six lines; while the truth is, that, to give a full description of the queer kinds of onions that are raised in different parts of the world, would make a book of itself; and I am beginning to think there is scarcely any other known vegetable that seems to be so exceedingly willing to be molded and fashioned to our wants as the onion. Just think of it! some onions bear the seed on top of the stalk; some bear it in the ground; others, instead of bearing seed on top, bear simply small onions. One kind is all stalk, or pretty nearly so—the Egyptian, for instance—and another is all bulb; and the little Barletta onion devotes its whole time and attention to making little bulbs—just right for pickles. I suppose that, if somebody really set about it, he could give us a brand-new and wonderful and valuable variety of onions every year, right straight along, as friend Livingston gives us a better variety of tomatoes every year right straight along. The price of the new onion book is 50 cents, postpaid. As we have quite a quantity of the "New Onion Culture" yet unsold, we have reduced the price of the latter to 25c; by mail, 30c.

THE AUGITE (OR ASBESTOS) STOVE-MAT.

During the past four months we have disposed of over 30 gross of these mats (over 4000), and there are few if any things in the way of household conveniences that have given such universal satisfaction and pleasure as these mats have done. The article written by Dr. Miller, in the Dec. 15th number, page 923, was effectual in calling the attention of many of our readers to the mat. If you have not read the article, turn back to the page mentioned and do so before you go any further. Well, the best part of it is, that we have finally succeeded in getting the mats at a lower price than we have been paying, and we propose to give our readers the benefit of it. Back numbers will give the prices we have been selling at. The price we will make from now on will be as follows: By mail, postpaid, 1 for 25c; 3 for 65c; 5 for $1.00; 12 for $2.20. By freight or express, you paying the charges, 1 for 20c; 3 for 50c; 12 for $1.60; 3 doz. for $4.50; 6 doz., $8.00; 12 doz., $15.00. Some agents are doing a thriving business with the mats. One man wrote that he took orders for 50 in two days, and at the same time ordered a gross. We have sold quite a number of one-gross lots, as well as 6-doz. and 3-doz. lots. If people knew its merits every house would take one or more. It is destined to be a household article, kept in almost every store for sale; but until it is generally kept in stores, agents will do a good thing for themselves, as well as the public, by introducing them where they are not known.

CHEAP WIRE NETTING.

We call your attention to the full-page announcement of wire netting, in this issue. Those interested may remember that, when we first issued this announcement in our Nov. 15th issue, we included 3-inch mesh No. 19 and No. 20 wire in the table at very low prices; and we also stated in the same number that we just learned from the manufacturers, after the full page had gone to press, that we should not be able to get these light weights. We have since secured a lot of them, which we have had shipped here, and which we offer, as long as they last, at the following very low prices. Most of the rolls are full length, 150 ft., but there is one occasionally that lacks two or three feet of this. We give here the quantity of each width that we have, and it can not be replaced when this is gone. We advise, therefore, if you wish to secure any of this, to order promptly.

9 rolls,	3-in.,	No. 20	netting,	18 in.	wide,	@ $	90	a roll.
1 "	"	"	"	24	"	"	1 20	"
2 "	"	"	"	30	"	"	1 50	"
6 "	"	"	"	36	"	"	1 80	"
5 "	"	"	"	42	"	"	2 10	"
30 "	"	"	"	48	"	"	2 40	"
3 "	"	"	"	60	"	"	3 00	"
2 "	"	"	"	72	"	"	3 60	"
6 "	3-in.,	No. 19	"	12	"	"	70	"
1 "	"	"	"	18	"	"	1 05	"
13 "	"	"	"	24	"	"	1 40	"
1 "	"	"	"	30	"	"	1 75	"
24 "	"	"	"	36	"	"	2 10	"
3 "	"	"	"	42	"	"	2 45	"
11 "	"	"	"	48	"	"	2 80	"
9 "	"	"	"	72	"	"	4 20	"

We have in stock here also:

3-inch	No. 18	netting,	12 inches	wide,	@ $	90	a roll.
3 "	" 18	"	18	"	"	"	1 35	"
2 "	" 20	"	12	"	"	"	90	"

Besides all widths of 2-inch No. 19 netting. On some of these widths we have an extra stock, and are making special low prices to reduce it. At these special prices, all shipments are made from here, and prices hold only as long as we have the surplus stock.

12 in. wide,	$1 00	per roll;	5 rolls,	$4 50;	10 rolls,	$8 50.
36 "	2 90	"	"	13 50	"	26 00.
42 "	3 20	"	"	15 50	"	30 00.
48 "	3 50	"	"	17 00	"	33 00.

On quantity orders for the 3-inch netting above, we give, on 5 rolls or more, 5%; 10 rolls or more, 10% from prices of a single roll.

Low Freight Rates and No Delays.

When you are considering where to send for your supplies the coming season, get prices and a list of goods on hand, from one of the following dealers, who handle **ROOT'S GOODS** in carload lots, thus securing them at lowest cost. Most of them, except those far distant, sell goods to users at factory prices, while those far distant add approximately only the carload rate of freight, so that you will **Save Time and Money** by buying your supplies of one of these dealers. We can not give here a list of goods kept, as it varies some at the different places according to the varying needs of each locality. Write to the place nearest you for list with prices, and when you write give a list of the goods you want, and mention this paper.

Quite a full line of goods are sold at factory prices by
F. A. Salisbury, Syracuse, N. Y.
H. G. Acklin, 1024 Mississippi St., St. Paul, Minn.
Jos. Nysewander, Des Moines, Iowa.
A good assortment is also kept for the Far West by
Barteledes & Co., Denver, Col.
For California by
G. G. Wickson & Co., San Francisco and Los Angeles.
For Oregon and Washington by
F. L. Posson & Son, Portland, Oregon.
For the Southeast Atlantic coast by
Baltimore Farm Implement Co., Baltimore, Md.;
and for the Far South by
J. M. Jenkins, Wetumpka, Ala.

A smaller assortment, consisting chiefly of Dovetailed hives, sections, smokers, foundation, and extractors is also kept by the following:
Henry F. Hagen, Rocky Ford, Colo. W. K. Ball, Reno, Nev. W. O. Victor, Wharton, Tex. John Nebel & Son, High Hill, Mo. Thos. G. Newman, Chicago, Ill. Walter S. Pouder, Indianapolis, Ind. Vickery Bros., Evansville Ind.

Our Hives, Comb Fdn., Sections, Smokers, Extractors, Perf. Zinc, etc., are furnished by a multitude of other dealers too numerous to mention. If you want to buy goods made at the Home of the Honey Bees, you can get them as cheap as you can anywhere when you consider quality and workmanship, and your orders will be taken care of promptly. Don't expect to get all the goods we advertise, from any of above dealers, and don't expect to get goods they do not agree to furnish; but find out what they agree to furnish, and at what price, by writing for list to address nearest you.

A. I. Root, Medina, O.

In writing to any of above please mention GLEANINGS.

I TELL you what, Jones, **Levering Bros.** sell the best goods and at the lowest price of any one I've struck yet. The largest and best equipped

Bee-Hive Factory

in the West. The Dovetailed Hive and New Hoffman self-spacing frame a specialty. Every thing used by practical bee-keepers at wholesale and retail. Send for their free Illustrated Price List, and save money. Supply Dealers, send for their Wholesale List. Address

LEVERING BROS.,
Wiota, Cass Co., Iowa.

3-14db

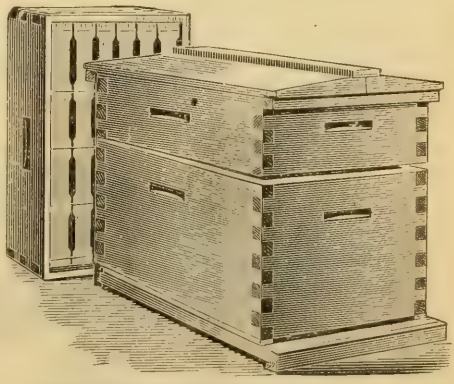
Please mention this paper.

14 Railroads

to carry the goods we manufacture to all parts of the country. Can cut any hive ordered. Langstroth improved Simplicity a specialty. All kinds of Bee Supplies, Queens and Bees. Light and dark colored Ferrets. Send for price list.

R. E. HARBAUGH,
2tfdb *25th & Clay Sts., St. Joseph, Mo.*

Please mention this paper.



THE HIGGINSVILLE DOVETAILED HIVE.

NO MORE leaky covers. The above cover will shed water, and will not warp like the old-style flat cover. Send for our 24-page Catalogue of all kinds of Bee Supplies. Address **LEAHY MFG. CO.,**
3-4-5d **Higginsville, Mo.**

Mention this paper.

Special Notices.

THAT NEW GREENHOUSE.

It would do your heart good to look into that new greenhouse this 15th day of February, and see the Grand Rapids lettuce, White Victoria onion-plants, radishes, peas, spinach, etc. The sashes are all up, and the glimpse we get of it from across the road here in the office makes it, to myself, a thing of beauty, and I hope it will prove to be a joy for a good while.

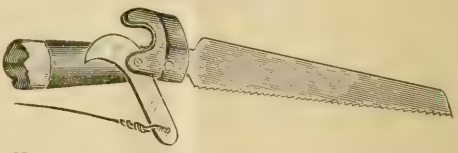
IGNOTUM TOMATOES IN CANS.

In saving the seed of the above-named tomatoes, we have for years been in the habit of canning the tomatoes. The juice is all taken out, so that the cans contain only the solid fruit; but we find ourselves with such a stock on hand that we now offer 3 lb. cans of the above for only a dollar a dozen. We want to get them out of the way so that, when we come to save seed again next season, we can put up a new lot of fruit.

YOUR EARLY PEAS.

Yes, how are you going to keep them off from the ground? The Alaska, we have pronounced the earliest good pea in the market; but it must have a little support; and the very nicest thing in the world to give it this support is the poultry-netting the boys have advertised on page 146 of this issue—12 or 18 inches wide. If the peas do not grow very rank and strong, 12 inches will do pretty well; but 18 inches is a little better where the ground is very rich. I prefer, also, the 3-inch mesh, because you can then reach through while getting the pods in picking. The netting should be held up about 6 inches from the ground; then, you see, the peas will have a chance to reach up and grab for it. The nicest way to support them that I know of is to have some sharpened rods made of ⅜-inch iron. Have the blacksmith make an eye on top, just about like the top of this interrogation-point. ? Now put your pointed rod down through the netting, in and out every alternate mesh; then, holding by the top, push it into the ground by twisting it first one way and then the other; then draw up the selvage of your netting and hang it on the hook in the eye on top. When your peas are all picked, unhook the selvage, pull out your rods, and roll up your netting. If there is a better way of brushing peas than the above, I have not found it; and it costs only 70c for a row of peas 150 feet long. The same roll can be used several times during the season, and you can use it as a support for other things than peas.

SMITH'S PRUNER.



Now is the time for pruning your fruit-trees, and this is the best tool you will find for doing it. You notice there is a knife, or shear, for small limbs, and a saw for large ones. The handle on which it is mounted is seven feet long, with a lever for operating the shear. They retail generally at $2.00. We will make an introduction price of $1.50 each, or $13.20 per dozen. Trees need pruning before spraying, and during this month and next is the best time to do it.

Closing Out.

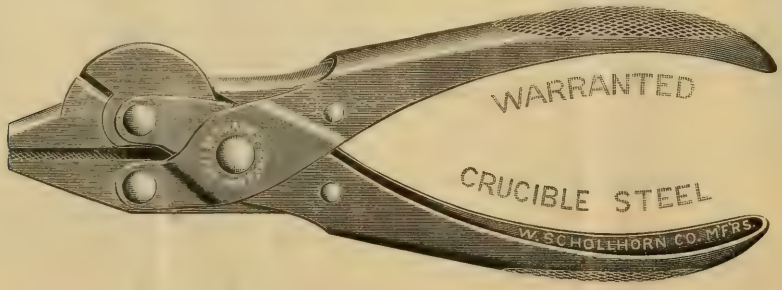
For the purpose of practicing law, I have gone out of the bee-business. My supplies must be sold, and will sell below their cost. Have about 80 New Heddon hives; 275 T supers; queen-excluding honey-boards; sections; foundation for sections; honey-extractor; and almost every thing else found in a large apiary. Some of these things have been in use, others, not. No circular. Write me what you want and I will tell you condition and price. The goods are at Newton, Jasper Co., Iowa, and will be shipped from there by my brother in April. References given upon request. Address 4-5d

Wm. L. DREW,
122 Oxford St., North Cambridge, Mass.

DOGS. Thoroughbred English Mastiff and Beagle hounds. Pups and trained dogs for sale. Prices reasonable. Ask about them. D. S. HALL, So. CABOT, VT.

Bernard's Parallel-jaw Crucible-steel Pliers.

We have these in three styles—flat and round nose, and cutting pliers, as shown above. We have also 3 sizes of each style, 4½, 5½, and 6½ inches long. The jaws open $\frac{5}{16}$, $\frac{7}{16}$, and $\frac{9}{16}$ respectively. The smallest cutting pliers cuts wire No. 13 and smaller; the medium, No. 10; and the large size, No. 7 and smaller. The advantages of these pliers over the ordinary kinds are very great. They have a compound leverage of 6 to 1, which, with parallel jaws, gives a very powerful grip. The throat is open, so that wire or similar articles can be passed right through. The cutting attachment is on the side, so you can cut off the head of a nail driven within ⅛ inch of the wood. You can cut any thing that you can get into them, except hardened steel, such as steel springs and music wire. They are fully warranted; and if injured in legitimate use they will be replaced by the manufacturer, whose name and address is stamped on every pair. For a fuller description, see p. 866 of GLEANINGS for Nov. 15, 1892.



PRICE LIST.	Length 4½	5½	6½
Flat-nose Bernard pliers, each	45c	60c	80c
Round-nose " " "	45c	60c	80c
Cutting " " "	70c	90c	$1.15
Postage extra, either style	04c	06c	08c

Special prices on quantities.

A. I. Root, = = = Medina, Ohio.

REAR YOUR OWN QUEENS.

Queen-Rearing Made Easy. Any One Can Rear Queens.

An Important Discovery Relating to Queen-rearing was discovered by me in the Season of 1892 and will be given in

THE MARCH ISSUE OF THE AMERICAN APICULTURIST.

It will tell how to rear queens in a full colony without removing or in any way disturbing the queen; how to start queen-cells and have them completed in the same hive with a fertile queen; in fact, 'tis just the information that thousands of bee-keepers have been seeking for a long time. The above copy of the Apiculturist is **Worth One Hundred Dollars** to any live bee-keeper; yet it will be mailed to any one at 25 cents per copy. For full particulars send for our 18-page circular. Address

HENRY ALLEY, Wenham, Mass.

SECTIONS.

Any width, No. 1, $2.50 per M. No. 2, $1.60 per M. Foundation, Dovetailed hives, Smokers, etc., cheaper than any other supply house in the U. S. Send for list free.

W. D. SOPER, Jackson, Mich.

We Want 1000 subscriptions to N. Y. Tribune before April 1st, and to get them we offer it one year to new or renewal subscribers at 75c. Send club of 5 and get yours free.

AMERICAN CLUB LIST, SHAMROCK, N. Y.

BEE-HIVES AND SUPPLIES.

Send for catalogue free. Address **SAMUEL JONES,** Highland Park College, Des Moines, Iowa. 1-19db

Bee-Hives.

Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue. 23-22db

W. H. PUTNAM, River Falls, Pierce Co., Wis.

Pacific Coast Bee=men

will find it to their advantage to correspond with the

Clipper Gap Bee=Hive Factory

for prices of Dovetailed hives, Hoffman frames, Honey Sections, etc.

S. F. WOODWORTH, Prop'r,
Clipper Gap, Placer Co., Cal.

Muth's

Honey-Extractor.

Square Glass Honey-Jars,
Tin Buckets, Bee-hives.
Honey-Sections, &c., &c.
Perfection Cold-Blast Smokers.

APPLY TO

CHAS. F. MUTH & SON, Cincinnati, O.

Send 10-ct. stamp for "Practical Hints to Bee-keepers." Please mention this paper.

SECTIONS.

$2.50 to $3.50 per M. Bee-Hives and Fixtures cheap.

NOVELTY CO.,
Rock Falls, Illinois.

6tfdb

Please mention this paper.

FALL Eggs and Plants, Fowls, Poultry-books and Papers; finely ill. circular free. Address GEER BROS., St. Marys, Mo., Or, H. B. GEER, Nashville, Tenn.

14tfdb

NOW FOR A BARGAIN.

I will sell complete Dovetailed hives for 65 cts. each in lots of 5 and over. Address *J. G. RISLOW,* *Lake Mills, Iowa.*

4d

Please mention this paper.

For new price list of

PURE ITALIAN BEES AND QUEENS, AND WHITE AND BROWN FERRETS, ADDRESS N. A. KNAPP, ROCHESTER, LORAIN CO., O.

Please mention this paper. 4tfdb

A large number of fine queens on hand; yellow and prolific; ready April 15th; warranted queens, $1; 6 for $4.50; select tested, yellow to the tips, suitable for breeders, each, $2. Reference, A. I. Root. 3tfdb

W. H. LAWS, Lavaca, Seb. Co., Ark.

Eastern Supply House.

We furnish every thing used in the apiary, and at bottom prices. Illustrated circular free.

I. J. STRINGHAM, 92 Barclay St., N. Y.

21-20db Please mention this paper.

ALSIKE CLOVER SEED

For sale. Fresh clean seed; per lb., 20c; per peck, $2.75; per half-bushel, $5.00; per bushel of 60 lbs., $9.00.

J. T. VAN PETTEN, Linn, Kan.

CHAFF HIVES.

I offer special inducements to those who will sell my hives. Send for terms. J. A. ROE, Union City, Ind.

Root's Goods AT ROOT'S PRICES can be had at Des Moines, Iowa. Address Jos. Nysewander.

GOLDEN WYANDOTTES.

Finest birds in the land. Cockerels, $5.00; trio, $7.00. Eggs, $2.00 per 13.

E. D. KEENEY, ARCADE, N. Y.

BEE-KEEPERS, NOTICE.

Send to E. J. SHAY, Independence, Preston Co., W. Va., for catalogue of Apiarian Supplies.

HATCH CHICKENS BY STEAM
WITH THE IMPROVED
EXCELSIOR INCUBATOR.

Lowest priced First class Hatcher made.

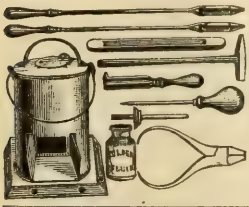
Thousands in Successful Operation. *SIMPLE, PERFECT, and SELF-REGULATING.* **Guaranteed to hatch a larger percentage of fertile eggs, at less cost, than any other Incubator.** Send 6c. for Illus Catalog. Circulars Free.

GEO. H. STAHL, Pat. & Sole Mfr., Quincy, Ill.

☞ Please mention GLEANINGS. 22-9db

SAFE, DURABLE FENCE; ONLY $80 PER MILE.
LAND-OWNERS save one-half the cost avoid dangerous barbs
Agents make $200.00 per month and expenses Cash
The best local and traveling agents wanted everywhere. Write at once for circulars and choice territory, address A. G. Hulbert, Patentee, care of Hulbert Fence & Wire Co. Manufacturers. 204 OLIVE STREET, St. Louis, Mo.
Factory Catalogue with 200 engraved designs and prices, sent free to any who want fancy iron and wire work or city, cemetery and farm fences, etc.

In writing to advertisers please mention this paper 21 20db



OATMAN'S SOLDERING AND REPAIR KIT

Consists of fire-pot, soldering-irons, solder, and soldering-fluid, with tools compl'te as shown in cut, with directions for soldering different metals, and how to keep your soldering-irons in shape. Whole kit, boxed, 12 lbs. Shipped on receipt of $2.00. Agents wanted.

O. & L. OATMAN, Medina, Ohio.
8-7db

300—FLORIDA
LEATHER-BACK ITALIAN QUEENS.

By my special method of harvesting a crop, in the "*migratory*" system, I shall have 300 *tested* queens for delivery about March 20th. $10 per dozen. *None are over 6 months old.* My crop the past season from one yard of 42 colonies, spring count, was 10,800 lbs., and increase to 150 A. F. BROWN,
1-6db HUNTINGTON, PUTNAM CO., FLA.

TAKE NOTICE!

BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH,
14tfdb New London, Wis.

Please mention this paper.

Spray your Fruit Trees and Vines

Wormy Fruit and Leaf Blight of Apples, Pears, Cherries and Plums prevented; also Grape and Potato Rot—by spraying with Stahl's Double Acting Excelsior Spraying Outfits. Best in the market. Thousands in use. Catalogue, describing all insects injurious to fruit, mailed Free. Address

WM. STAHL, QUINCY, ILL.

BUFFALO, N. Y. Unsurpassed Honey Market. BATTERSON & CO. Responsible, Reliable, Commission Merchants. 18tfdb and Prompt.

SAVE MONEY.—Send to J. P. H. Brown, Augusta, Georgia, for his price list of supplies. Hives and foundation at wholesale rates. 4tfdb

"Quigley's Golden Queens"

are bred for business; try one. Circular of Queens and Bee Supplies ready Feb. 1st. Send for it, and a free sample copy of the

PROGRESSIVE BEE-KEEPER.

Address E. F. QUIGLEY,
2tfdb Unionville, Mo.

Please mention this paper.

HOW FOOLISH YOU ARE

to use those sticky Hoffman Frames. See my improved L. Hive and frame. You will laugh with delight. Time is money. Send a postal. Eighteen years' experience. 2-4-6d

F. BOOMHOWER, Callupville, N. Y.

Please mention this paper

NEW BOOKS,

15 | How to Make the Garden Pay.** 1 35
By T. Greiner. This is a new book, just out, and it gives the most explicit and full directions for gardening under glass of any book in the world. Those who are interested in hot-beds, cold-frames, cold-greenhouses, hot-houses or glass structures of any kind for the growth of plants, can not afford to be without the book.

5 | The New Onion Culture* 30
This book is by T. Greiner, and it gives full particulars of the plan of planting onion seed in a greenhouse, hot-bed, or cold-frame, and planting the onions out in the field at the time we usually sow the seed. The author thinks that 2000 bushels of the large tropical onion can by this method be raised on an acre.

2 | The New Celery Culture 15
This summing-up of this new industry amounts to this: You fix your ground just as rich as you can possibly get it, with stable manure, chemical fertilizers, or any thing else that will do the business. Then put out your plants 7 inches apart each way, and give them water enough to make them boom right along from the word go. The idea is somewhat new; but enough succeeded in 1892 to demonstrate that, like the new onion culture, it promises great possibilities.

2 | Rats: How to Rid Farms and Buildings of them, as well as other Pests of like Character 15
This little book ought to be worth dollars instead of the few cents it costs to any one who has ever been troubled with these pests, and who has not? It is written in such a happy vein that every member of the family will read it clear through, just about as soon as they get hold of it. It contains a complete summing up of the best information the world can furnish.

5 | Tile drainage, by W. I. Chamberlain 35
Just out. Fully illustrated, containing every thing of importance clear up to the present date.
The single chapter on digging ditches, with the illustrations given by Prof. Chamberlain, should alone make the book worth what it costs, to every one who has occasion to lay ten rods or more of tile. There is as much science in digging as in doing almost any thing else; and by following the plan directed in this book, one man will often do as much as two men without this knowledge. The book embraces every thing connected with the subject, and was written by the author while he was engaged in the work of digging the ditches and laying the tiles HIMSELF, for he has laid literally miles of tile on his own farm in Hudson, O.

5 | Tomato Culture 35
In three parts. Part first—by J. W. Day, of Crystal Springs, Miss., treats of tomato culture in the South, with some remarks by A. I. Root, adapting it to the North. Part second—By D Cummins, of Conneaut, O., treats of tomato culture especially for canning-factories. Part third—By A. I. Root, treats of plant-growing for market, and high-pressure gardening in general. This little book is interesting because it is one of the first rural books to come from our friends in the South. It tells of a great industry that has been steadily growing for some years past, namely, tomato-growing in the South to supply the Northern markets. The little book, which is fully illustrated, gives us some pleasant glimpses of the possibilities and probabilities of the future of Southern agriculture. Even though you do not grow tomatoes to any considerable extent, you will find the book brimful of suggestions of short cuts in agriculture and horticulture, and especially in the line of market-gardening.

| Handbook for Lumbermen 10

2 | Practical Turkey-raising 10
By Fanny Field. This is a 25-cent book which we offer for 10 cts.; postage, 2 cts.

4 | Peabody's Webster's Dictionary 10
Over 30,000 words and 250 illustrations.

1 | Silk and the Silkworm 10

A. I. ROOT, Medina, Ohio.

We Want 1000 subscriptions to N. Y. Tribune before April 1st, and to get them we offer it one year to new or renewal subscribers at 75c. Send club of 5 and get yours free.
AMERICAN CLUB LIST, SHAMROCK, N. Y.

HUNT'S FOUNDATION FACTORY.
Send for **Free Samples** of the **Finest Foundation** and **Sections** made. Special prices and advantages to dealers in Foundation. Send for my new illustrated **Free Price List** of every thing needed in the apiary. M. H. HUNT, Bell Branch, Mich.
2tfdb Please mention this paper.

BEES QUEENS
SMOKERS, SECTIONS, COMB FOUNDATION
And all Apiarian Supplies cheap. Send for Catalogue.
E. T. Flanagan, Belleville, Ill.

FOR SALE. About 1700 lbs. of pecan nuts. Samples sent to any one making an offer.
2-7db R. A. JANSEN, Wharton, Tex.

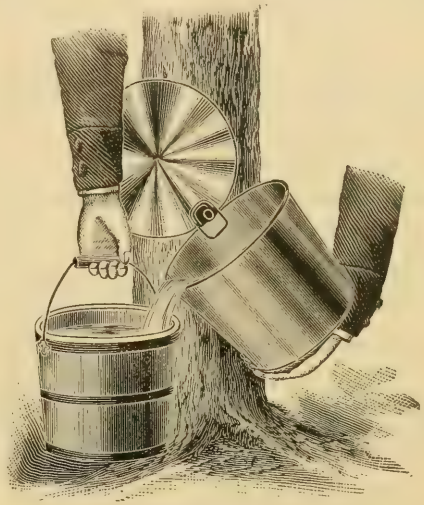
FOR SALE 250 COLONIES FINE ITALIAN BEES
IN DOVETAILED HIVES, $4.00 EACH.
Lots of 20 or more, special prices on application.
2-7db *MRS. PAUL B. LEEDS, AVERY P. O., LA.*

Climax BERRY CRATES and BASKETS.
Indorsed by all leading berry growers as The BEST. Also Gift Packages, Grape, Peach and other Baskets. Prices low. Illus. Catalogue Free.
DISBROW MFG. CO., ROCHESTER, N. Y.
Please mention this paper. 4-9db

AUTOMATIC COMB FOUNDATION MILLS. | **Made by W. C. PELHAM, Maysville, - Ky.**
Please mention GLEANINGS. 3 7db

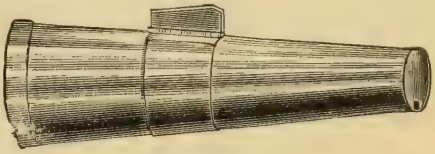
Maple-Sugar Supplies.

The time is at hand when those who produce the delicious sweets from the sugar maple must be getting ready. For the best results you must have good clean apparatus of the most approved type, and you really can not afford not to read Prof. Cook's book, "Maple Sugar and the Sugar-bush," which we furnish at 35c, or we will give a copy free to all those who buy sugar-makers' supplies of us to the amount of $10.00 or more. We do not sell evaporators, but I think we can do you some good on spouts, pails, covers, and cans. We have ordered a carload of these for delivery Feb. 1st, and they are made of American tin-plate. The plates are tinned and made up into cans by the same firm; and by taking a carload we get them at bottom prices. See table below. The pails and cans are machine-made, far superior to hand-made, and guaranteed not to leak.



BUCKET WITH HINGED TIN COVER.

This cut shows the manner of hanging the bucket on above the spout, and also the manner of emptying with the hinged tin cover. Most progressive sugar-makers nowadays use covers of some kind.



RECORD SAP-SPOUT.

This spout is cheaper than any other made, and we believe it is as good as any, if not better. It is used almost exclusively in this section.

PRICE LIST OF PAILS, COVERS, SPILES, ETC.

Price per 100....	IC tin.	IX tin.
10-quart bright tin buckets, per 100..	$15 00	$17 00
12 " " " " ..	16 00	18 00
15 " " " " ..	18 00	21 00

Patent hinged tin covers, per 100.....$6 00
Wood reversible covers, per 100.....$4 50
Record sap-spouts, per 100 ....$1 00; 1000 for $8 00
1-gal. sq. cans, " .. 11 00
1 " " " 6 in a box, per box.$ 90; 10 boxes.$ 8 50
1 " " "10 " " " .. 1 50; " " .. 14 00
5 " " " not boxed, each... 30; 100.. .. 26 00
5 " " " 2 in a box, per box. 75; 10 for.... 7 00
5 " " " 1 " " " ... 45; " " 4 20

A. I. ROOT, MEDINA, OHIO.

FOR SALE OR EXCHANGE.—Four colonies of Golden Italians, Foundation, Honey-racks, etc.
3-4-5d L. L. ESENHOWER, Reading, Pa.

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CIRCULARS RECEIVED.

The following parties have sent us catalogues of hives, apiarian supplies in general, bees, queens, etc. Free copies will be sent to applicants.

L. Johnson, Masontown, Pa.
C. F. Muth, Cincinnati, Ohio.
Henry Alley, Wenham, Mass.
H. F. Hagen, Rocky Ford, Col.
G. H. Kirkpatrick, Union City, Ind.

CONVENTION NOTICES

The Texas State Bee-keepers' Association will hold its 15th annual session at Greenville, on Wednesday and Thursday, April 5 and 6, one mile north of the court-house, at the apiary of Mrs. Jennie Atchley. All are invited. No hotel bills to pay.
A. H. JONES Sec., Golden, Texas.

Don't Forget
to send for our 1893 circular. Dovetailed hives, Sections, Bee Supplies, etc. *J. NEBEL & SON,*
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I shall be glad to book your orders, for what queens you may wish, for early spring or summer delivery. Prices for untested, February, March, April, and May, $1.00 each; six, $5.00, or $9.00 per dozen; June and after, 75c each; $4.25 for 6; or $8.00 per dozen; 100 tested three-banded queens, $1.50 each, for early shipment. Prices for breeding-queens on application.

Remember, I breed both the three and five banded Italians at above prices. My queens give satisfaction, judging from the many testimonials from nearly three thousand sold in 1892. Safe arrival and satisfaction guaranteed. Also Hives and Supplies low. 2tfdb

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Greenville, Hunt Co., Texas.

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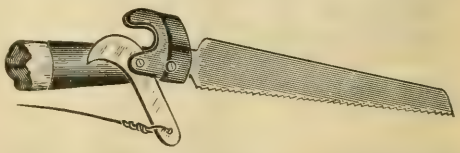
Smith's Pruner



Now is the time for pruning your fruit-trees, and this is the best tool you will find for doing it. You notice there is a knife, or shear, for small limbs, and a saw for large ones. The handle on which it is mounted is seven feet long, with a lever for operating the shear. They retail generally at $2.00. We will make an introduction price of $1.50 each, or $13.20 per dozen. Trees need pruning before spraying, and during this month and next is the best time to do it.
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CITY MARKETS.

KANSAS CITY.—*Honey.*—There is no change in the honey-market; stocks are fairly large, with a good demand. White 1-lb., 16@17; No. 2, 15; dark, No. 1, 13@14; No. 2, 12; extracted, 7@8. *Beeswax*, none on hand. HAMBLIN & BEARSS,
Feb. 20. 514 Walnut St., Kansas City, Mo.

ST. LOUIS.—*Honey.*—There is a scarcity of extracted honey here. No change in prices. *Beeswax*, prime, 26½. D. G. TUTT GRO. CO.,
Feb. 20. St. Louis, Mo.

CLEVELAND.—*Honey.*—There is no change since last report. We are offered honey about ½ cent cheaper than two weeks ago—No. 1 fancy white. WILLIAMS BROS.,
Feb. 20. 80 & 82 Broadway, Cleveland, O.

KANSAS CITY.—*Honey.*—Receipts light; demand good. We quote: 1-lb., No. 1 white, 16@17; No. 2, 14@15; No. 1 amber, 15; No. 2 amber, 10@12. Extracted, white, 7@7½; amber, 5@6. *Beeswax*, 21@24. CLEMONS-MASON COM. CO.,
Feb. 21. Kansas City, Mo.

BUFFALO.—*Honey.*—Honey is moving off very slowly. Fancy is selling at 16@17; No. 2, 12@14; buckwheat, dull at 8@9. *Beeswax*, 28@30; second grade, 22@25. Stock on hand is very light. There is no doubt that all will clean up satisfactorily. BATTERSON & CO.,
Feb. 20. 167, 169 Scott St., Buffalo, N. Y.

BOSTON.—*Honey.*—We have had a better demand for honey the past thirty days than for the previous ninety days. We are selling best 1-lb. comb at 15@16. Extracted, 8@10. No beeswax on hand. BLAKE & RIPLEY,
Feb. 20. Boston, Mass.

NEW YORK.—*Honey.*—Comb honey dull. White clover, 1-lb. sections, glassed, fancy, 14@15; fair, 12@13; 2-lb. sections, fair, 11@13; buckwheat, 1 lb., 9@11. Extracted, Southern, per gal., 65@70; Cuban, 75@80; California light amber, 9½@9¾. *Beeswax* firm at 30. THURBER, WHYLAND & CO.,
Feb. 21. New York.

MINNEAPOLIS.—*Honey.*—There is a good supply on hand, but it is mostly dark. This stock is slow, but what little white is on the market moves readily. We quote: Fine white clover, 17@18; 2-lb. combs, 16@17; buckwheat, 13@14. Extracted, 10@11. These are selling prices. We are not buying.
Feb. 23. J. A. SHEA & CO.,
14 & 16 Hennepin Ave., Minneapolis, Minn.

CINCINNATI.—*Honey.*—Demand remains slow from manufacturers, for extracted honey, but is good from the jobbing trade for family use. Supply scant. It brings 6@8 cts. per lb. on arrival. There is no choice comb honey on the market. The best white brings 14@16 cts. in a jobbing way. *Beeswax.*—Demand is good, at 23@25 for good to choice yellow on arrival. CHAS. F. MUTH & SON,
Feb. 21. Cincinnati, O.

ALBANY.—*Honey.*—The Lenten season has caused an increased demand for comb honey. There is, however, but very little stock left on the market, and prices are firm. Clover, 14@16; buckwheat, 10@10½. Extracted, white, 9@10; dark, 7@8. *Beeswax* dull and prices lower; 23@25. CHAS. MCCULLOCH & CO.,
Feb. 21. 393-397 Broadway, Albany, N. Y.

SAN FRANCISCO.—*Honey.*—Honey is very scarce and in demand. We quote: Extracted, with light supply, 7½@8; comb, 1-lb. frame, 12@14; 2-lb., 9@11. SCHACHT, LEMCKE & STEINER,
Feb. 23. San Francisco, Cal.

ALBANY.—*Honey.*—Our stock of honey is lighter than ever before at this season, and prices are well sustained. Comb, white, 14@16; mixed, 12@13; dark, 10@11. Extracted, white, 9@9¼; mixed, 7½@8; dark, 7@7½. *Beeswax*, 28@30. H. R. WRIGHT,
Feb. 20. Albany, N. Y.

DETROIT.—*Honey.*—Best comb honey, 13@15; stocks low. Extracted, 8@8½ for light; 7@7½ for dark. *Beeswax*, 26@27. M. H. HUNT,
Feb. 20. Bell Branch, Mich.

Muth's Honey

In packages of ¼, ½, 1, and 5 lbs.,
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Caramels.

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GEO. H. KIRKPATRICK,
UNION CITY, IND.

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Wm. L. DREW,
122 Oxford St., North Cambridge, Mass.

VANDERVORT COMB-FOUNDATION MILLS.

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Swarming Prevented!

THE BEE-KEEPERS' REVIEW will take another step in advance by publishing in its March issue an illustrated article by B. Taylor, showing how, by a slight modification of hives and a little manipulation, the bees from two queens can be made to work unitedly in one super, and SWARMING ABSOLUTELY PREVENTED. Send 10 cents, and when this No. is out it will be sent, together with two other copies of late but different issues; or for $1.00 the REVIEW will be sent from January to the end of the year. The 50-cent book, "Advanced Bee Culture," and the REVIEW one year for $1.25. 10tfdb

W. Z. HUTCHINSON, Flint, Michigan.

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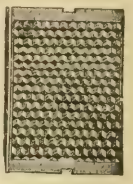

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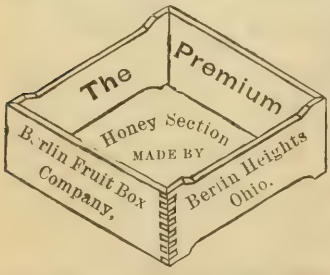

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GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS

ILLUSTRATED SEMI-MONTHLY

PUBLISHED BY A. I. ROOT

$1.00 PER YEAR MEDINA OHIO

Vol. XXI. MAR. 1, 1893. No. 5.

STRAY STRAWS

FROM DR. C. C. MILLER.

OLD COMBS, if you have any to melt up, should be broken up fine while it is cold enough for them to be brittle.

WILL FOUL BROOD originate from rotten brood? is asked in *A. B. J.* Of the 24 answerers, only three seem to have any fear of it.

THE SEVERE WINTER has the hopeful side that the ground is continuously covered with snow, and clover ought to be well protected.

WHEN CHILDREN are cross, we call it "*cross*." When you or I are cross, we call it *tired* or *nervous*. I suppose children wonder at the mystery of language.

GRIMSHAW, a noted English bee-keeper, should have had the credit of starting the theory that heredity comes through the workers rather than the queen.

IF OVER 30 PAGES of solid reading are to be in next GLEANINGS, please send mine in two installments. It always makes me feel bad next day when I sit up so late.

IN TOASTING BREAD, you can save lots of time by putting the slices in the oven to heat before toasting. Indeed, you can complete the toasting in the oven if all is right.

BROTHER ROOT, while you are about it developing so many kinds of onions, suppose you develop an odorless onion. Then we can eat a dinner of onions without hiding in the woods the rest of the day.

I DON'T KNOW very many things for certain, but on one point I felt comfortably confident—that "the longest pole knocks the persimmons." But Golden's picture on page 127 sets me back in dark ignorance, for it seems the persimmons are not "knocked," but "clumb and picked."

THE PRIZE SHOW of honey intended for the World's Fair is reported by the *British Bee-keeper* as remarkably fine, "a unique event in the annals of bee-keeping—the like of which will probably never occur again." Liquid and granulated extracted honey are mentioned, but no comb.

RED CLOVER. H. S. Babcock (*Agriculturist*) thinks may yield honey at first crop, if nectar rises high enough in the tubes. But he thinks "the persistence of bee-keepers in the belief that red clover does afford nectar to the hive-bee is not proof of the fact." But, bless your heart, Mr. B., when they see thousands of bees working on the blossoms, isn't "the persistence" of the bees pretty strong proof?

THE WORD "STOCK" is given in Phin's dictionary as meaning the hive and every thing in it, thus making it differ from "colony" which means only the bees. Others, especially in England, use "stock" as synonymous with "colony." Wonder which is right. It would at least be more convenient to take Phin's view.

THE HEREDITY QUESTION was submitted by M. Bertrand, editor *Revue Internationale*, to the great naturalist, M. Alph. de Candolle. He thinks size and strength may be affected by food, but not qualities of the nervous system. But M. Bertrand propounds some conundrums that seem hard to answer, on the other side.

DON'T BOIL SYRUP for winter feeding, or for spring either, is the advice of W. B. Webster in *B. B. J.* He says the sugar has been already cooked, and, if merely allowed to stay on the fire till dissolved, it will need no acid to prevent granulation. If you prove any thing on either side of this question by trial, please report.

CAN YOU CLINCH a wire nail? You drive it through, then try to clinch it, only to find that you have driven it partly back, and the point refuses to stay down. Try it this way: After driving through, bend just a little part at the point with the claw of the hammer, then make side strokes in clinching and see how it will hug.

BEE-STING CURES have always included saleratus, on the ground that an alkali neutralizes the formic acid. Now come two writers in *B. B. J.*, enthusiastic over an acid as a remedy—vinegar. One says it stops pain, but not swelling. The other has seen it used on several people, in each case entirely preventing swelling.

WHY DO GOOD solid writers go to romancing when they write for the agricultural papers? One of them lately gave, as an average profit in an average year, of a single colony of bees in the hands of a beginner, besides paying $2.25 for a smoker and book, a clean profit of $8.75. I don't see any good to come from such statements.

ALFALFA seems to do well in Western New York, at least in some parts. The State Experiment Station reports: For seven successive years at the station, three and four cuttings per year have been taken from the plats, and on the sixth year of the succession the plats yielded more than fifteen tons per acre of green forage, equal to 5.6 tons of alfalfa hay.

BEE-POISON has a new function ascribed to it by a German bee-keeper. He thinks it is a disinfectant, disinfecting the air that comes into the hive, even to killing the germs of foul brood that float in the air, and advises against upward ventilation, which allows the escape of

the disinfected air. He also approves crowding bees into a small space, so that the poison may be more condensed.

A BEE-BRUSH is thus described by Mrs. Jennie Atchley, in *A. B. J.*: "A brush made of corn shucks is good, tearing the shucks into shreds, and tying on to a handle like a little broom; this makes the best and cheapest brush of any thing I have tried. When it becomes hard, dip it in water." That's good, Jennie; but wouldn't you like Coggshall's better?

THE GENIAL FACE of J. A. Green, together with his biography, appears in *A. B. J.* He says he doesn't expect to be married till Fortune has smiled on him a little more kindly. You're making a bad mistake, Jimmie. Fortune doesn't smile on any such foolishness. Never you mind Fortune. Just get the girl to smile on you all right, then fix up the hive in good shape as you can, and Fortune will snicker right out at you.

LANGSTROTH'S REMINISCENCES.

LANGSTROTH'S MOVABLE FRAME; HOW NEAR OTHERS CAME TO INVENTING IT.

Early in the spring of 1852 I moved all my bees to my new apiary, adding to them a large number of stocks in common box hives, which were afterward transferred to the movable-frame hives. This apiary was under the charge of Henry Bourquin, a very skillful cabinet-maker, and an enthusiastic lover of bees. He made the pieces necessary to change my bars into movable frames; and on the first day warm enough for bees to fly, the side attachments of the combs to the front and rear walls of the hive were cut, the bees shaken off the combs, and the uprights and bottom strips nailed in place; and so the bar hive became at once a movable-frame hive, in full possession of a stock of bees.

Imagine me so absorbed in manipulating these frames, with the bees upon them—removing from the hive and replacing them—shaking the bees from them, and changing their relative positions, etc., as not to notice the presence of an old bee-keeper, nor even to hear him, until he fairly shouted out, "Friend Lorenzo, you are so taken up with your new hive that you seem unable to hear me, or to see any thing else. No doubt you think you have made a great invention; but I say you have made no invention;" and then, repeating the words, "you have made no invention," several times to my great astonishment, he wound up by saying, "Friend Lorenzo, you have made no *invention* at all, but, rather, a *perfect revolution* in bee-keeping!" You have got what I have so long wished for—that control of the combs of a hive, by which you can at any time know the condition of your bees; and, if any thing is wrong, be able to apply the proper remedy."

That same season I had over one hundred movable-frame hives made, some of which were sold with the right to use the patent whenever it should issue; but by far the larger number were publicly used in my own apiary in West Philadelphia.

I am the more particular in recording these facts and dates, because afterward there was an unfortunate misunderstanding of them by the late Baron von Berlepsch, to whose researches and writings modern bee-keeping is so greatly indebted. In the Feb. No. of the 7th Vol. (1872) of the *American Bee Journal*, I have given a full account of this matter, and to this account I refer those who wish for fuller information. There can be no doubt that my recorded application for a patent on a movable frame antedated that account of his hive which Berlepsch sent to the editor of the *Bienen Zeitung*, nor that he afterward strongly condemned his own invention, and requested the editor to relegate it to his lumber-garret. Nor did he, until some years later, refer again in the columns of the *Bienen Zeitung* to the subject of movable frames; and when he did notice them, my hive was already largely in public use, and a demonstrated success.

It was not until after I had applied for a patent that I had any knowledge of the hive of the late Major William A. Munn, of England, which was patented in France in 1843. The first edition of the pamphlet in which this hive was described (1844) had been so effectually suppressed by the author, who offered the second edition free to any one releasing the first, that it was with great difficulty and at considerable expense that I obtained a copy of it, Major Munn himself not having preserved a single one. The second edition of his pamphlet, in which he materially changed the plan of his hive, was published in 1851; but its great cost, and the absolute impossibility of manipulating with it to any advantage, made his hive, either for observation or for practical use, very much inferior to the Huber hive, which it was designed to supplant. It was never referred to by Bevan, nor recommended by any other English authority in apiculture.

After my hive, in a modified form, had been introduced into England by the lamented Mr. Woodbury, Mr. Munn again tried to bring his hive into notice; and he evidently thought that my invention had been copied from his, while he had been denied the proper credit to which he was entitled. I need hardly say how entirely he was mistaken in this opinion.

In justice to the Major, it should be stated that he seems to have been the first person who attempted to use movable frames inside of a case or box. His priority in this respect was evidently unknown to Kline when he published, in German, his history of movable-frame hives. Mr. Munn had certainly struck out a very important idea, but he failed so entirely in adapting it to practical use that his invention produced scarcely a perceptible ripple upon the apicultural ocean. In a private letter to me, he says that his great difficulty was *in preventing the bees, when left to themselves for a short time, from shutting up the shop.*" A mere glance at his hive, as figured and described in 1851, with the wide spaces left, in some places, between the frames and the case, shows very plainly a sufficient cause for his failure, even if there had not been others almost as obvious.

In 1847, Mr. Debeauvoys, of France, introduced an invention, also designed to supersede the Huber hive. In its first form it proved a complete failure. There being no bee-space left between his frames and the case containing them, the bees soon propolized them to the roof and front and rear walls of this case, so as to make them practically immovable. In 1851, a memorable year in the history of movable-frame hives, Debeauvoys published improvements upon his first plan, and, later still, made other modifications of them. But with all his efforts, he failed, as Hamet, editor of a French bee-journal, writes, to secure the approval of those most largely engaged in bee-keeping, while it was the great good fortune of my hive, from the very start, to find the most favor with this very class.

The Debeauvoys hive, in its approved form, kept the uprights of the frame at proper distances from the walls of the case, and some of its worse defects might easily have been remedied. To fail, after coming so near to success,

has been the hard lot of how many inventors! The failure of this hive in France created such a prejudice against movable frames as left that country for a long time decidedly in the rear in apiarian progress. See an article by Charles Dadant in the *American Bee Journal*, Vol. 7, p. 197. Neither the Munn nor Debeauvoys hive made any provision for securing the surplus honey outside of the case holding the frames; and this defect alone would have proved an insuperable bar to their general use.

Dayton, Ohio. L. L. LANGSTROTH.

Continued.

IS SUGAR SYRUP CONVERTED INTO HONEY?

THOS. WM. COWAN, THE EDITOR OF THE BRITISH BEE JOURNAL, DEFINES HIS POSITION IN THE MATTER OF DIGESTION; DIGESTION OF NECTAR; ANALYSIS OF HONEY, ETC.

In GLEANINGS for Jan. 1, page 31, I am reminded of a communication of mine respecting digestion, about which I had entirely forgotten. I have now referred to the article in GLEANINGS to which I alluded, and I find that it arose out of the review you were kind enough to make of my book, "The Honey-bee," on page 323, April 15, 1891. The review was a very good digest of what my book contained, and in the first column you ask the question, "What is digestion?" and the reply is given in almost the same words as those found in my book, which are, "The object of digestion is to separate the nutrient part of the food from the non-nutrient, and to convert the former (*i. e.*, the nutrient) into a liquid fit to mingle with the blood, and thus to nourish the body of the insect." To this our friend Professor Cook took exception on page 359 of GLEANINGS for May 1, 1891, where he says, "Mr. Cowan is usually very accurate; but is digestion separating the food? I should say, digestion is rendering the food capable of being absorbed, and that absorption did the separating."

To many it may not be apparent that there is any disagreement between the two statements; and, so far as the practical bee-keeper is concerned, it would not very much matter if there were. But from a physiological point of view, of course it is interesting to know how digestion is affected. For the definition of the word I might refer to several dictionaries; but I suppose that a dictionary compiled by your best men, and published in your own country, would be looked upon by your countrymen as of considerable authority; I therefore refer to Webster's International Dictionary, revised by Noah Porter, and in the latest edition I find that "to digest" is defined, "To separate [the food] in its passage through the alimentary canal into the nutritive and non-nutritive elements; to prepare, by the action of the digestive juices, for conversion into blood; to convert into chyme." Here you have what I think is the correct definition of digestion, and I maintain that no absorption could take place without separation first. The food, coming in contact with the gastric juices in the chyle-stomach, is partly dissolved and converted into a liquid fit for absorption at once; the remainder, which is separated from the liquid portion, is forced, by the muscular wall acting upon it, into the small intestine, where digestion is completed. Here the portion of the food that has escaped the soluble influence of the gastric juice of the stomach is further digested and separated. The digested portion of the food is absorbed, and the residue passes on to the next part of the alimentary system; and as all the nutrient portion has been absorbed, what remains is evacuated in the form of excreta. It will thus be seen that the process of digestion is both a chemical and a mechanical one. The very act of making the food capable of being absorbed necessitates a separation of it.

There is another point I should like to touch upon briefly, because I find that, in GLEANINGS for Jan. 1, 1893, Prof. Cook, in his article on "Sugar-syrup Honey," apparently quotes passages from my book which seem to support his proposition. The question turns upon whether sugar syrup given to bees, and stored by them in the combs, is honey. Prof. Cook maintains that it is; but I am sorry to say that I for one must differ from our friend; and, for reasons which I shall endeavor to explain as briefly as possible, I do not think such a product could be legitimately called honey. If there were any doubt in my mind I would gladly give our friend the benefit of it. He bases his conclusions upon:

1. His statement that honey is digested nectar.
2. That sugar syrup, after being stored by bees, was pronounced by competent bee-keepers as honey.
3. That three chemists analyzed it, and could not distinguish it from the best clover and basswood honey.

With regard to the first, he quotes me as supporting his hypothesis; but I think I can show that there is a considerable difference between us as to the definition of honey.

It is true, I state on page 7 of "The Honey-bee," that "the nectar which is gathered from flowers has been converted into honey by a secretion derived from the salivary glands," and I also state that Dr. Planta has shown that this alteration consists in the conversion of the cane sugar in the nectar into grape sugar of honey. But neither Dr. Planta nor myself, nor even Mr. Cheshire, call this digestion, and I think from the explanation I have given above it will be understood why we can not call honey digested nectar.

By reference to page 106 of my book it will be seen that I say, "The food taken by the mouth enters the œsophagus, which continues through the thorax as a narrow tube, and expands, after it has reached the abdomen, into the honey-sac, this acting as a temporary reservoir for the collected nectar. From here the food passes on, to be digested by the action upon it of the gastric juices secreted by cells in the chyle-stomach." It will be seen from this that I do not even mention digestion as commencing before the food enters the chyle-stomach. Then on page 110 I say, "By the action of the juice produced by these gastric glands upon the food, in the process of digestion in the chyle-stomach, it is changed into *chyme*. This first stomachial digestion is called *chymification*." Please note that I say "this first" digestion, showing that I consider that digestion does not commence till the food enters the chyle-stomach, nor can it be said to do so in any true sense of the term. That the cane sugar of nectar is converted into the grape sugar of honey is true, but this can not be called digestion.

Now, there is another quotation made by Prof. Cook to support his theory, taken from my book, on page 10 of GLEANINGS, which, as printed, is not quite correct, and thus does not convey the meaning intended by me. It is this: "The production of a secretion to assist *digestion* to convert the cane sugar of nectar into the grape sugar of honey." Here the omission of a comma, found in the original, and printing digestion in italics, which is *not* found in the original, quite alter the meaning, and appear to convey the idea that digestion and conver-

sion of the cane sugar are directly connected with each other; whereas, it is not so. The comma is placed there in order to prevent the repetition of what the "functions of the glands" are. The passage referring to the functions of the glands in my book reads thus: "The production of a secretion to assist digestion, to convert the cane sugar of nectar into the grape sugar of honey, for the elaboration of wax, etc." The commas cut up the paragraph into different sentences; and you see from this that the meaning is quite different, and I can not see how it can be adduced in support of Prof. Cook's theory at all. As the italics do not exist in the original, they go for nothing in the quotation.

The next point I should like to touch upon is, whether sugar syrup stored by bees in the combs is converted into honey. To this I have no hesitation in saying it is not; and this notwithstanding what the chemists and the bee-keepers mentioned by Prof. Cook affirm. Now, what does the experiment our friend alludes to prove? Simply this: That the 23 lbs. of syrup given to the bees was turned into *invert* sugar, and not into honey at all; and that even that a certain quantity of the cane sugar, viz., 8 per cent, remained unaltered, there being 67 per cent of glucose. Honey does not contain any cane sugar at all, but is composed of about equal parts of dextrose and levulose. Besides these, honey contains formic acid, essential oils derived from the plants, and small quantities of other saccharine substances, which combined give it the peculiar aroma and flavor. Remove these and the characteristics of honey are gone.

To go fully into the chemical properties of honey, glucose, etc., would make this article too long; but I should like to point out that, notwithstanding what the chemists quoted by Prof. Cook say as to the analysis of this syrup-fed production, it is possible to determine with certainty pure honey from any such spurious imitation. This may be done by means of the polariscope, combined with previous dialysis, by the method of Dr. Hænli.

I stated that honey is composed of dextrose and levulose. The crystalline portion of honey twists a ray of polarized light from its ordinary straight path toward the right, and is on that account called *dextrose;* the non-crystalline portion turns it to the left, and is, therefore, called *levulose.* The great bulk of honey consists of about equal quantities of these two sugars. There are a few exceptions, such as, for instance, conifer honey. The rotation of levulose to the left is greater than the rotation of the same quantity of dextrose is to the right; therefore when found in about equal quantities, as in pure honey, the polarized ray is twisted to the left. *All* other sugars turn the ray to the right, so that, whatever saccharine admixture is made to honey, it is thus readily detected. It is specially marked in the case of starch syrup, or commercial glucose, so that it is very easy to detect even a small admixture of this substance, which, in addition, contains also *maltose.* Cane sugar can also be detected in the same way, as it is strongly dextro-rotary. Conifer honey has a peculiar composition, in that it contains a larger proportion of dextrose; consequently the ray of polarized light is turned to the right. Until recently is was difficult to distinguish with certainty conifer honey from adulterated honey; but Dr. Hænli's researches have given us an infallible and easy method, not only of determining this with certainty, but also the exact proportion of adulteration of pure honey with glucose or any other sugar. This is done by *dialysis* previous to polarization. It has been found that, after dialysis of a certain number of hours, the deviation of the ray of polarized light to the right or to the left remains stationary, and that all pure honey will turn the ray to the *left*, even if it turned it to the right previously, as it does in conifer honey; but that any admixture of glucose or cane sugar would always turn it to the *right*, notwithstanding the dialysis.

Now, as regards cane sugar given to bees and stored by them in combs, the following was the result: The solution of cane sugar before it was given to the bees turned the ray of light to the right + 105°. After being sealed in the combs for 6 weeks it was + 65°; and the same after 8 months in the combs. But after a dialysis of 10 hours the deviation to the right was reduced to + 9°; and after 20 hours it was further reduced to + 7°, and at this it remained stationary. Normal honey has an average deviation of — 30° to the left. This experiment is very interesting, because, during the time the bees were being fed they were also collecting small quantities of honey, which, mixed with the sugar syrup, reduced the deviation of the ray of light to the right to + 65°. But even this admixture of honey, whatever the quantity might have been, could not alter the dextro-rotation of the ray which remained stationary at + 7°.

It will, therefore, be seen that sugar syrup, stored by the bees in the combs, is not converted into honey, although it may be invert sugar; also, that the smallest admixture of cane-sugar syrup to honey can easily be detected.

There is a good deal more I could say on this subject; but I feel that I have already made this communication too long; but I think I have been able to show that it is not so difficult to detect the difference between such a spurious product and honey. It may be a comfort to bee-keepers to know this, for I can not imagine any thing more detrimental to the industry of bee-keeping than that bee-keepers should themselves for a moment countenance adulteration in this form. Many years ago an attempt was made by some unscrupulous Scotch bee-keepers to show sugar-fed supers; but by appointing an analyst, the British Bee-keepers' Association was able to nip in the bud adulteration in any form; and now at all shows held under our rules, honey is shown only subject to analysis if necessary.

Thos. Wm. Cowan.

P. S.—Since writing the above, Gleanings for Jan. 15 is at hand, and I am pleased to see Prof. Cook has withdrawn his advocacy of putting sugar-fed combs on the market, and I am also pleased that there should have been so general and determined a protest by the bee-keepers against feeding for such a purpose. Mr. Heddon seems to think that the public does not care whether honey is adulterated or not. But the public does care; and as an instance I can mention that American honey has not taken the position it should have done on our markets, and that at times large quantities have been lying in Liverpool, and could not find purchasers, even at times when British honey has been scarce. What do you suppose is the reason? It is because that, so long ago as 1879, a person named Hoge, and Messrs. Thurbers introduced adulterated honey, consisting largely of glucose. Later, Hoge started a factory in London for manufacturing pure California honey and horehound honey; also other sorts of honey. Our analyst exposed the frauds, and the adulteration was stopped; but the injury was done; and to this day the sale of American honey is very small in proportion to what comes from other countries; and there is a deep-rooted prejudice against it. So you see the injury done fourteen years ago is still felt, and this, I

think, shows that the public does care for adulteration. T. W. C.

[Perhaps our readers may be greatly surprised to see the heading above, when we, in our issue of Jan. 15, declared that the discussion had gone far enough, and would have to be closed, and that, too, when we had rejected so many articles from our friends, supporting our own position. In our issue for Jan. 15, we had forgotten the fact that Mr. Cowan was referred to by both Prof. Cook and ourselves as authority. As he lives on the other side of the "big pond," and is, a part of the time, away from home, many days would elapse before he would see the discussion, and the matter wherein his name as authority was involved. It would be simply impossible for him to have replied in our Jan. 15th issue; and it seems to us that it is only a matter of justice and right to him that, inasmuch as his name and book were referred to in the discussions, he be allowed to explain his position. The article is a most valuable one, and we believe there is no higher authority in all Europe, on the question at issue, than Mr. Cowan. His statements in regard to analysis, and the elements that make up true floral honey, agree substantially with those of Prof. Wiley at the Washington convention.]

CALIFORNIA.

IS IT A GOOD PLACE FOR A NOVICE TO COMMENCE BEE CULTURE? ALSO SOMETHING IN REGARD TO THE STATE OF LOUISIANA.

"i seen a Pece what you had wrote in Bee GLEANINGS about californy," etc.

This, Mr. Editor, is a sample from one of the many letters which I have received from would-be immigrants from the East. After an introductory like the above will follow a thousand and one questions, more or less, relative to bee-keeping, fruit-growing, house rent, the cost of furniture, wages, what kind of work is to be had; and one man, after telling me all about his children, wanted to know whether the climate was adapted to "raising babies."

The young man who wrote the letter inflicting so many wounds upon Uncle Sam's English, and with a quotation from which I begin this letter, is, I am happy to state, not a bee-keeper, but merely a lusty young laborer who happened to stumble across a copy of GLEANINGS containing a "Pece what you had wrote." I sent him a postal card, stating he had better not come here, as we think so much of our State that any man who would dare write California with a little c would be lynched as soon as we could get hold of him.

I have answered most of these letters heretofore; but after this one through GLEANINGS I shall answer no more.

Regarding the prospects for future prosperity from embarking in the business of honey production here, I would state that, of those already here and engaged in the business, not more than one in fifty makes more than a poor living at it. It may be our own fault, and I rather think it is; but I do not believe the newcomers will succeed any better than the old-timers do.

Our average crop is perhaps no larger than the average crop east. All kinds of supplies, except foundation, are higher in price here, while the money we get per pound for our honey and per swarm for our increase is considerably less than bee-keepers east get for the same items. We can probably keep more colonies advantageously in one location than can be done in any of the Eastern States; but judging from reports, I do not think we have any flowers which secrete honey in such abundance as your basswood and clover do. On a sage-ranch there are millions of blossoms, but each one contains so minute a quantity of honey that it takes a bee a long time to get a load. Mr. Manum, of Vermont, reports a gain of his scale hive of 33 pounds in a day. Mr. Mercer's report of 18 pounds is the most I ever heard of being gathered in one day here, and that is 7 pounds greater than any other California report of which I know any thing.

Once in five or six years we get a crop, the bountifulness of which is perhaps greater than you ever have east; but in such years the honey is a drug upon the market—the world is flooded with it, and I have seen our finest honey selling for three cents a pound, only $3.60 a case, and from that must be deducted the dollar which the case cost. Take it all in all, I doubt whether bee-keeping is as profitable here as in the East. For my own part, I have had my apiary of 55 hives, in Louisiana, average over 200 pounds to the colony, while my best average in California has been but 130 pounds, and that, too, from a small apiary—only 80 hives. (I have never had bees, however, in a good location during a good season.)

But as regards this question of profit; I think it depends more upon the man than upon the locality. If the bee-keeper is energetic and intelligent he will succeed east, or west; and if he is lacking in these qualifications he will fail in either place.

One sees but little mention of Louisiana as a State adapted to bee-keeping; yet it is among the best. To my positive knowledge, some twelve or fifteen years ago the Hon. Chas. Parlange, now Lieut. Governor of the State, and then a young law student, made a $4000 crop in one apiary. It was brains and energy that did it, and the same qualifications have now raised him to a high position in the government of the State, and made him prominent at the bar of New Orleans.

I would advise all bee-keepers migratorily inclined to investigate into the resources of Louisiana before coming here and competing in an already crowded district.

I was a boy when Mr. Parlange first commenced bee-keeping on his place near my old home, and it was from visiting his apiary that I was incited to engage in apiculture. I began with 10 three frame nuclei, which I purchased of Mr. P. L. Viallon; and the third year after the purchase I had increased to 97 strong colonies, and sold, that year, over $900 worth of honey.

Apropos of the discussion on adulterated honey, the crop produced that year by Mr. Parlange, my brother, and myself, was sent in one shipment to a commission merchant in St. Louis. I do not remember now how many barrels of honey there were, but nearly enough to load a steamboat—a very small one perhaps—but at any rate, the merchant to whom it was sent concluded so much honey was never gathered by bees, and so had some of it analysed by a chemist. The chemist pronounced it as being adulterated with sugar. Since that time I have always thought chemists were frauds.

From just what the bulk of Louisiana honey is gathered I could never make up my mind. I wrote to GLEANINGS in those days, and suggested corn; but A. I. R. laughed at me. Then I criticised Prof. Cook's Guide, wherein he said we reaped a rich harvest from cotton; and then A. I. R., in his foot-notes, preached me a sermon on charity; something which he would not have done had he known in what esteem I held Prof. Cook, and the value I placed upon his opinion; for it was by closely following the teachings of Cook's Bee-keeper's Guide that I

was enabled to increase those 10 nuclei in three years up to 97 strong stocks, and get honey from them in proportion. To this day I value the Guide a little more than any other bee-book, and I have all the American ones.

I wish some of the bee-keeping fraternity in Louisiana would write a "pece for BEE GLEANINGS," and tell us all about the honey industry there at present. I am sure there are many of "BEE GLEANINGS'" readers who would be interested.

So, Mr. Root, you made fun of my bee-escape. Well, L. E. Mercer does the same thing; but his son Bert, who is the better bee-keeper of the two, says it's a "dandy."

WM. G. HEWES.

Newhall, Cal., Feb. 1, 1893.

[Very good, friend Hewes. I should say you are about right in what you say in regard to California. While in New Orleans a year ago, friend Winder and myself talked over this matter of that great crop secured by Charles Parlange; and now I want our Louisiana bee-keepers to stand up and tell us what the matter is. Haven't there been any more such good seasons, or is it the right sort of man that is needed to secure the honey? I really beg your pardon, friend H., for what I did so many years ago. Perhaps we are all a little wiser now than then.]

RAMBLE 79.

HOW THE RAMBLER SHOOTS SQUIRRELS.

After crossing the pass beyond Mr. Donahue's, our road led us down grade several miles. We at length struck bottom in a beautiful valley that seemed to have no way out of it except over those immense mountains that arose on every side. Here we found a ranch known far and near as Sheckler's. Mr. Sheckler is a large, well-built man; and if there is any wind in the valley his whiskers are of the kind through which it could blow. The house is embowered in trees and grapevines, and we were invited to a seat on the veranda, and a big watermelon was brought in for us to struggle with. Our host has upon his ranch, horses, mules, and cattle; and it appeared to us that he owned the whole valley; 300 colonies of bees were also kept to gather the sweets, and the location was an ideal one for the easy gathering of honey. The bee can fly up lightly to the mountain-sides, and drop down easily with its load. Mr. S. was another of those men who were free to confess that their bees do not get the attention they deserve, and he was desirous of adopting better methods of management.

His bees were also condemned by the fruit-man over in Del Zura, six miles away, and over a rough and rugged mountain, and threats of suing and poisoning were burdening the air.

"Why," said Mr. Sheckler, "if any persons poison my bees, or burn them, and I find out who it is, I'll plant the red spider and the scale on his trees, and retaliate until he gets enough of it. Yes, I would." He did not say he would girdle or mow down the young trees, or poison horses and cattle; but even such a method of retaliation would be no worse than what fruit-men are doing. It was really refreshing to hear Mr. Sheckler defend the honey industry; and, though he talked so strongly about retaliation, I have no doubt he would be slow to put it into practice. Perhaps bee-keepers have done such retaliatory deeds, but we never hear of them, which speaks well for their patience and forbearance under many trials.

From the Sheckler ranch we *do* have to climb over those mountains, and, after a very pleasant hour's talk, we set our faces toward the next pass we could see, miles ahead, and follow the heavy grade up and up. We wind around into deep gorges, and then upon a sharp curve we come out on the next spur of

the mountain; sometimes under frowning rocks on one side, and a deep gorge on the other; and often, where we have a magnificent view of the valley, a sharp lookout ahead is necessary to enable us to meet at the proper turning-out places those big loads and many-teamed wagons. When we at last cross the pass we enter the Potrero country, and a little later climate. In the Potrero settlement we camped again and pitched our tent on the soft ground in Chris Nelson's garden. This young man kept bachelor's hall in a neat cottage, which he had built on a government claim. Here he has settled down for an indefinite time, having followed the sea for many years, and wandered all the way from Sweden. He is also the happy possessor of 200 colonies of bees, all in Harbison hives.

I found here an improved sun wax-extractor, which rendered the wax very nicely, and also rendered the honey, and left it in a tank, with little or no discoloration, nor a taste of being overheated. A sample was drawn from the tank, and we all pronounced it first class. The

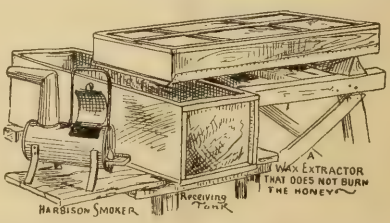


photo shows that the extractor is an ordinary shallow tank. It is provided with a tight tin bottom; at one end is a wire-cloth dam, or strainer. After passing through the strainer, the wax congeals and the honey runs a little further and drops into the large cool tank, but little the worse for its sun bath.

The Harbison smoker is also shown in the photo. This stove smoker, so much used in

California, is admirably adapted to use with the Harbison hive. Open the door in the rear, and the smoke, escaping from the bent tube, rolls out and up against the bees, and quickly subdues them. The fire-box will hold fuel enough to last half a day, or even longer. Our friend was thoroughly wedded to the Harbison hive, smoker, and 2-lb. section. The bellows smoker was no good in that apiary, just as a Harbison smoker would be no good with a Langstroth or other hive where we desire to blow the smoke down. Though nearly all of the colonies are worked for comb honey, Mr. N. has an extractor, and uses it to some extent.

While with Mr. Nelson we all happily "bached" together so far as the cooking was concerned. We had been very lucky that day in hunting quail, and we had a delicious feast. The Rambler's way of preparation is to first get a fine bed of coals (I want Dr. Miller to take particular notice); then fork a fine slice of bread and hold it just far enough from the coals to nicely brown it; then butter to suit. The aroma of the bread will begin to sharpen the appetite; but meanwhile the quails have been parboiled, then cut open, properly salted and spiced, and nicly browned in the skillet; and when laid carefully on the toast—oh! such a delicious combination of odors arise and fill the room, that every one is soon engaged in passing the savory morsels to the mouth. We close the eyes, and the senses of smell and taste held us in a delightful control; and while the dainty morsel was on my tongue the imagination was quickened, and the following ode to Dr. Miller was composed:

O Dr. Miller! raise you nose
And catch the sweet perfume;
It's far above the fragrant rose,
For you smell and then—consume.

Chorus.—No women need apply.

Do, doctor, come to my cabin door;
Th' old bach gives a welcome call;
There's always room for just one more,
And toast and quail for all.

Chorus.—No women need apply.

Delightful experiences, however, are fleeting; and before the rich aroma had vanished, our tent was folded, and, with a brotherly wrench of the hand, we bade Chris Nelson farewell and climbed to the next divide and crossed the pass into the Campo region.

Under the high pressure of barley, whip persuader, and gravity, Kimball and Bob made great speed down every grade we came to, and it was here the Rambler put in some fine shooting. Gray squirrels were quite plentiful; and finding that our dog Queen was fond of them we tried to appease her appetite by shooting a few every day; and when in camp they were roasted for her. Now and then a squirrel would be seen sitting on a limb, making a fine target; and my request to Mr. H. to stop the horses until I could take aim was usually answered with a snap of the whip, and a shout, "Go, Bob," and the wagon would fairly dance over the road; and while it danced, the report of the gun resounded, and Queen, with a yelp, brought in the game. It is something like shooting at a mark from a flying trapeze; but it's nothing after you get the hang of it.

CHRIS NELSON'S APIARY, POTRERO, CAL.; TECARTE PEAK IN THE DISTANCE.

Another way people have of shooting squirrels, where they are very shy and run up a tree on the opposite side from them, is to keep a sharp lookout up the tree; and whenever the tail is seen sticking out, as it often will, the hunter shoots the tail. The squirrel, feeling something out of order, then whirls around to see, so to speak, who struck Billy Patterson, and indiscreetly shows his head. The other barrel is instantly discharged, and down comes the squirrel. This kind of shooting requires a double-barreled gun, and quick work every time. The Rambler, however, is not an expert at that kind of shooting, and leaves it to the more experienced marksmen.

At noon we camped by a sparkling stream in a beautiful dell, canopied with tall sycamore-trees. Near by was a pretty cottage, and posted on one of the trees was a sign informing us that this was the home of the Widow Bedott. Now, I used to read the Widow Bedott papers several

years ago with pleasure, and was quite desirous to make her acquaintance. Having in mind Messrs. Miller's, Root's, and Murray's vile matrimonial intentions toward my present freedom and happiness, and fearing some kind of a trap in waiting, I took the shot-gun and approached the house. After reconnoitering, making slow advances, and finally a *coup de main* I captured the premises and found them deserted. Now, I know not whether or not the original Widow Bedott lived here or not. Be the case as it may, I was glad to find no widows around, for that infernal Cupid that the artist stuck to my left pedestal still haunts me.

The Jameson bee-ranch was our next stopping-place; but that, too, was deserted by the owner, and he had left for a more congenial neighborhood. Mr. J. had introduced the Langstroth hive, and his apiary of about 200 colonies was a portion Langstroth and the rest Harbison. As in many other apiaries, we found several colonies that had been destroyed by moths. The moth is not, however, such a troublesome factor in this climate as I had supposed; but when an apiary is left alone for weeks, and weak swarms become the prey of robbers, the combs become a prey of moths. It would be a most interesting item in the line of bee-keeping statistics to know the amount of wax destroyed or wasted in California apiaries. I opine it would astonish even California bee-keepers themselves.

The mountains rise up grandly all around us now. We have left Tecarte Peak behind us, but it looks down upon us yet. From the Jameson ranch we rattle down hill again, and, upon a sudden turn in the road, we overtake a man and woman in a big wagon—a team ahead, and several horses following after. My friend thought he would play smart, so he pulled out, and, flourishing whip and persuader, rushed by the astonished native. Our wild career was, however, brought to a sudden stop; for, in going over a sharp water-break, snap went Kimball's whiffletree. "There," said I, as we leaped from the wagon, "that's just as I expected from your reckless driving, and here we are, ten miles from a house, in a howling wilderness, with bears, wildcats, coyotes, and a broken whiffletree—it's all your fault."

"Yes," shouted Mr. Hansen, with his German blood up; "yes, and who's a kicking?"

I said not a word, but carefully removed my Waterbury watch, and began to wind; and before my task was completed, the native we had so gaily passed came up. His name, we afterward learned, was Joe Beals, an ex-Dutchman with a Spanish wife and a dozen (more or less) children and dogs. Joe, seeing our sad plight, reached down into the bottom of his big wagon and fished up an old but serviceable whiffletree and generously loaned it to us, and in due time it was carefully returned. We were thus delayed but a few minutes, and the adverse clouds that hung over us for a few minutes had indeed a silver lining. Blessed be the name of Joe Beals and his Spanish wife. Blessed be his dozen (more or less) half-breeds; and blessed be his horses and oxen, his dogs, and his bees.

With these two thoughts we continued our journey; and to imitate the example of Joe Beals in helpfulne ss to strangers is the resolve of Mr. Hansen and the Rambler.

Later.—I wish to inform the readers of Gleanings that Mr. Nelson, of Potrero, the happy independent bachelor mentioned above, has disappointed all of his bachelor friends by recently introducing into his residence a meddler with pots, kettles, brooms, etc., and bearing the name of "wife." Mr. Nelson was captured during the late autumn months while laboring under a cerebral aberration of the mind. He wandered too near the enthralling glances of a lonely syren, and was made a life-prisoner. It is a sad episode, and shows the frailty of a California bachelor's best intentions. It will, however, serve as a warning to the rest of us, and it will be a long time before the capture of another bachelor bee-keeper will be recorded. R.

QUEENS BY MAIL TO AUSTRALIA.

A NEW STYLE OF CAGE.

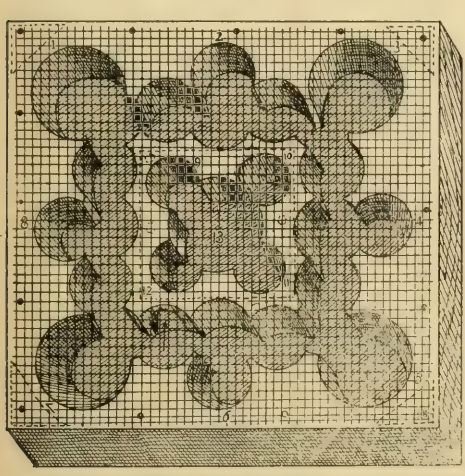
All the readers of Gleanings who have preserved their numbers for 1892 will find, by turning to pages 232 and 233, something regarding the mailing of queens to Australia, together with illustrations of the shipping-cages which I had used for this purpose. During 1891 I succeeded in getting about 66 per cent of the queens mailed to that country alive, which I considered quite an achievement, and I still consider it the same. During the past year I sent nearly double the queens to that country that I did in 1891; but as the first queens sent were returned to me on account of the postal laws, some of the colonies in Australia not allowing queens in the mail, I had to devise some way of their going through the postoffice at San Francisco, Cal., without detection. For this purpose I used cage No. 1, as illustrated in the article above referred to, wrapping the same in perforated paper, then inclosing both in a perforated envelope, sealing the envelope, and slipping that in a larger envelope with very slight perforations. In this way all went through safely so far as being stopped was concerned; but not so with the queens, for I have to report only about 33 per cent as arriving there alive, against the 66 per cent in 1891.

There were some things the past year which I can not account for. The success on the July steamer was very poor, only one out of all sent arriving alive, while of those sent on the August steamer about one-half went alive. Of those sent on the September boat, nearly all went alive; and of those sent on the October vessel, not one went alive, unless, perchance, two did which I have not heard from. Now, why the difference when all were put up alike? Again, all the queens to certain parties went alive, and other parties received all of theirs dead, from the same steamer. I am studying over these matters, but as yet no reasonable solution of the matter has been arrived at. There is a possibility that those on the October steamer were fumigated in San Francisco on account of the cholera scare; yet, if I understand friends Root aright, some from them went through alive on that boat. Could it be possible that those from me were fumigated while others were not? It hardly seems possible.

There is one thing worthy of note, which is, that the queen that went alive to New Zealand in 1884 went in September, and nearly all went alive which were started last September; and during September, 1891, I had by far the best success. I account for this by the fact that our weather here during the month of September is of a medium temperature, while on arrival over there they have a similar state of affairs. During all the other months they either arrive over there during cool or cold weather, or else must have 3000 to 5000 miles of travel in the cold in our northern hemisphere, which we generally have during October.

Up to the year 1893 we had been restricted in our operations, owing to no law in our favor regarding the mailing of queens to Australia;

but, thanks to our friend and brother, W. S. Pender, of West Maitland, New South Wales, Australia, the laws have been revised so we shall not, in a certain sense, have to smuggle the queens through. If I make no mistake, we can now use a cage of any dimensions which shall give the best results in mailing queens, and are not obliged to be held to the dimensions formerly given in our Postal Guide. From Mr. Pender I received a cage of bees November 30. The bees were all dead, and evidently died within a day or two after mailing, as the candy was scarcely touched; but notwithstanding this I think the cage the best of any thing I have seen, and so send it along with this, asking that you, Mr. Editor, will have it illustrated, so that all who wish to make a trial of bees to foreign countries may know what it looks like.



PENDER MAILING-CAGE.

The fault that caused the bees to die, as I see it, was in the candy, which is nearly as hard as a rock. But I will let Mr. Pender tell us something about the matter, and what he expects of this cage. Oct. 28 he wrote me as follows:

Yesterday evening I mailed you a queen of no special value, as an experiment. The cage is a suggestion which I should like you to criticise in GLEANINGS, if you think there is any merit in it. You will see, no matter what position the cage may be in, the bees can get at the candy. You will also note a provisioned close chamber in the center of the cage, to which the bees are expected to retire in cold weather. Will they do it? This is the only feature in the cage I am not sure about. The candy used contains very little honey, hence very little nitrogeneous matter to accumulate feces. The little honey used was brought to nearly the boiling-point, and as much powdered sugar stirred into it as possible, and then kneaded with the hands. I am going to try a candy with no honey, using a small quantity of a deliquescent substance, such as phosphoric acid, carbonate of potash, etc., in its place, to give the necessary moisture. I think this would work like a barometer. In a cold climate it would absorb moisture, and in hot weather it would dry out so much that it would prevent running. By striking a medium, candy should be made that would contain no nitrogen, and hence not cause the bees to accumulate feces. I hope the cage will be the outcome of successful mailing of queens to Australia.

Yours respectfully,
W. S. PENDER.

I have no special criticism to make. Not a bee was in the central chamber when it arrived, nor do I think they would be apt to enter it, should a cold wave strike them. My idea would be to fill this central part with candy, having four openings, or feed-holes, to it; then by having a large candy-hole in each of the four corners there would be no danger from their ever being cut off from their provisions. Used in this way it gives promise of success above any other, according to my opinion. Geo. James, Gordon, N. S. W., Australia, under date of Sept. 30, suggested something quite similar, he having suggested the cage used with success by Bianconcini in shipping to that country. It would look as if we were making advancement very rapidly in this matter of shipping queens long distances, and I look forward with much interest to the results of another summer. Will Prof. Cook, S. Corneil, and others, give us a little light along the line of making candy with powdered sugar and phosphoric acid, etc., as suggested by friend P.? G. M. DOOLITTLE.

Borodino, N. Y., Feb., 1893.

[There may be some good features in the cage illustrated; but as we view it, we regard it as too large, too expensive, and, worse than all, too frail. We greatly prefer the No. 2 cage, illustrated and described by our correspondent on page 232 of last year. It is strong; and, having four candy-holes, one at each corner, it has practically the feature of the cage above illustrated; viz., giving the bees a supply of food in several compartments, and so arranged that all are not likely to get clogged up with dead bees. We should be glad to hear from Prof. Cook and S. Corneil on the candy question. In the mean time, perhaps the following letter from Miss Wilson may be of value.]

A NEW BEE-CANDY.

SOMETHING THAT WILL KEEP SOFT AND MOIST, FOR QUEEN-CAGES, FOR A YEAR OR MORE; HOW TO MAKE, ETC.

Some days ago Dr. C. C. Miller sent us by mail a small tin box containing a soft moist candy, which had been made more than a year previously, and inquired what we thought of it. We were interested at once, because we had not hitherto been able to make a candy that would invariably keep soft and moist for more than six weeks and yet not run and be dauby; and even then, on account of sudden changes of the weather, the candy would become so dry as to let the bees starve, or become so dauby and messy as to kill the bees by suffocation. We thought that, if the article could be obtained, and could be made to remain soft, it would be quite an acquisition. We at once wrote to Dr. Miller, asking him where he got it, and whether he knew how it was made. After a reasonable length of time, we received a letter containing this exasperating piece of information:

Dear Ernest:—You want to know how that bee-candy was made. There are some people who are selfish enough, when they find out a good thing, to want to keep it to themselves. I don't want to be egotistical, but I really think I'm not one of that kind. In fact, I take a certain pleasure in telling things, and sometimes tell more than people want to hear. As to how that candy is made, I have no desire to keep it a secret, and would just as soon tell you as not; but the fact is, I don't know. C. C. MILLER.

Marengo, Ill., Feb. 15.

[After the doctor had led us to believe, clear

up to the last line, that he was going to tell us how to make that candy, we were—well, "mad" because he didn't. We had about given up all hopes of ever knowing, when along came a letter from a member of Dr. Miller's family, that gives us just the information desired.]

Mr. Root:—

Dr. Miller insists that I must give you the history of the sample of bee-candy he sent you. He says it's one of the things he "don't know." I can tell you all I know, but am not at all sure that I can give entire satisfaction. Not long ago he was looking for something, I don't remember what, and was rummaging through the kitchen cupboard. If there is any one thing for which Dr. Miller has decidedly *not* a talent, it is finding things. He will look in the most unlikely places, and, after becoming discouraged, will appeal to one of the female members of the household, who, likely as not, will readily find the article in some place where he has stoutly insisted there's no use in looking, as he has searched the same place "most thoroughly."

On this particular occasion he reached down a dish from one of the upper shelves, and said, "Say, Em, what's this?"

I told him it was a dish of frosting that was spoiled in making, and had stood there about a year.

Instead of putting it back where he got it, and attending to his own affairs, as every properly trained man ought to do, he seemed to be particularly interested in it, and began poking his fingers into it, feeling it and tasting it. Then he asked me all sorts of questions about it, and ended up by asking me where he could find a little tin box in which to send a sample to Medina. I tried to dissuade him from it, thinking it not worth while, and telling him I didn't care to have samples of my failures in cookery distributed broadcast. But, as is usually the case when he gets a kink in his head, he would not listen to reason, so you got the ample.

It was made in this way: One cup of granulated sugar, a very small pinch of cream of tartar, and enough water to dissolve the sugar; put on the stove, and boiled until, by trying a little of the syrup by pinching it, it would string from one finger to the other, when it is ready to take from the fire. Turn into a dish and stir or rub it with a spoon against the side of the dish until it "creams." (You understand the syrup is clear in the first place, and it may be said to "cream" when it assumes an opaque or milky appearance.) Then add the white of one egg beaten stiff, a little at a time; beat the egg in thoroughly, and it is ready for use.

The frosting in question didn't look quite right. I was afraid I had not boiled it quite long enough; and as I was particularly anxious to have my cake very nice I concluded not to use it, but set it to one side, intending to feed it to the bees at the proper time, and at the proper time forgot all about it, and that accounts for its standing there so long. Had it worked all right it would have hardened in about an hour. Now I have told you all I know about t.

It still stands in the dish into which I turned it—a soup-plate. There is a thin layer of syrup at the bottom; above that, the frosting or candy, or whatever you call it, is about three-fourths of an inch deep, and of a uniform consistency throughout, the same as the sample sent you.

Whether I could ever make any exactly like it again, I do not know. Whether the exact degree of boiling it had is important, I don't know. The addition of the egg may be of some importance. Sugar syrup properly creamed will stay soft for some time; and when it does harden it can be readily softened by the addition of a few drops of water.

Chocolate creams, with the exception of the outside coating, will remain soft for a long time. As usually made, they are simply the white of an egg beaten stiff with enough confectioner's sugar kneaded in to make it handle well. I make them by boiling confectioner's sugar and creaming, then adding a tablespoon of thick sweet cream, without any egg. I think they are much improved when made in this way. I feel pretty sure that glucose is used in their manufacture in the commercial article.

I don't know, but I imagine bee-candy might be made by boiling sugar and creaming it, then adding the egg and a very little honey. I mean to experiment a little, anyhow.

Emma Wilson.

[If we were "mad" at the doctor we entirely forgive him now for being able to *recognize* a good thing when he saw it. There are just few people in this world who *know* when they have a good thing. How often it happens that valuable information and discoveries come about by mere accident! Whether this "find" of the doctor's will prove a valuable one or not, remains to be seen; at all events, we hope that now, as the secret is out, many of the friends will put the matter to test; for if such candy can be made, and kept, it is going to prove to be a valuable acquisition. It seems, from the recipe for making, that the *egg* is that which keeps the candy soft. A small quantity of it certainly would not be hurtful to the bees, and possibly it might add much to the value of the food.

Miss Wilson alludes to cream chocolates. There, now, why didn't somebody think of that before? They can be purchased at almost any grocery, and, so far as we can remember, they are soft and moist, and would be *the thing* for queen-cages. One of these will just about fill the candy-hole of a cage; and by slicing off the end, the bees would have the nicest kind of prepared food—that is, providing glucose is kept out of it. We shall certainly try it at our earliest opportunity. How many times it happens that bee-keepers who are not actual queen-breeders, but who, for some reason or other, desire to send a queen to a friend, have not any suitable bee-candy! but *now* they can go right to their grocery and buy a few chocolate creams. Several good recipes for making chocolate candy out of pure materials will now now be in order.]

EXTRACT FROM THE REPORT OF THE LAST CONVENTION OF THE GERMAN, AUSTRIAN, AND HUNGARIAN BEE-KEEPERS.

THE DZIERRON THEORY QUESTIONED.

I inclose you an extract from the report of the annual convention of the German, Austrian, and Hungarian bee-keepers, which appeared in the *Bienen Zeitung* in full. If you deem it of interest to your readers you are at liberty to make use of it or any part of it in Gleanings. I have tried to select the best, and I shortened and condensed most of it considerably.

Naples, N. Y., Feb. 3. Fr. Greiner.

The 37th annual convention of the German, Austrian, and Hungarian bee-keepers met in Budapest, from the 12th to the 15th of September, 1892. Budapest is situated on the Danube, in Hungary, and is centrally located as regards the Austrian empire.

About 250 bee-keepers took part in the proceedings. Among the many was Dr. Dzierzon, now in his 83d year, the Hungarian bee-keepers honoring

the hero in apiculture by sending a delegation to escort him to Budapest.

As had been done formerly, an exhibition was connected with the convention, and it was indeed an extensive one; the features of the same being as follows:

1. Live bees; 2. Bee-hives; 3. Honey and beeswax; 4. Honey-products; 5. Tools and appliances; 6. Literature.

The convention was formally opened by the Minister of Commerce, Bela Lukacs. As the first thing on the program, Dr. Dzierzon spoke on the subject of "What is the real value of some of the latest discoveries?" He touched on but two. It will be remembered that Rev. Mr. Wurnstorf, of Goslar, discovered a way of manufacturing comb with full-depth cells. Dzierzon did not think the use of such was an advantage, he preferring comb foundation, considering the fact that the artificial comb was four times as heavy as foundation; too costly, and difficult to ship. He believed foundation answers all purposes as well or better.

2. In regard to Rev. Mr. Weygandt's advanced theory, that the excrements of the bees, when in a healthy condition, were dry and odorless, and discharged inside of the hive, Dzierzon said: "Whoever is familiar with the nature of the bee also knows that bees void an offensive-smelling brownish fluid, and we bee-keepers are glad when our bees are offered the opportunity to void in the spring, etc.

Next, Mr. Vogel introduced the subject: "Which destroys the surplus queen-cells—bees or queens?" and spoke at length. The gist of the matter was: Under certain circumstances, the working bees destroy the surplus cells; usually the queen does this, and the workers help along; he emphasized the idea that the workers and not the queen were the reigning element in the hive.

Next, W. Guenther presents his ideas regarding the matter of: "Is it best to allow the queen full sway inside of the hive, or would it be advisable not to have the honey-apartment accessible to the queen?" Guenther is in favor of using the excluding metal between the brood and honey apartments.

A most interesting topic was given consideration by Metzger, of Budapest, concerning the function of the spermatheca of the queen. Perhaps it would be well to give this lecture a little more in detail. Mr. Metzger said:

"The spermatheca of the queen-bee has been supposed to be a receptacle for the seminal fluid only, performing the act of fertilizing the passing eggs mechanically. A lifeless pocket, or sack, might possibly do this; but I doubted its being so, especially when considering the size of the receptacle in proportion to the size and number of spermatozoa it is expected to contain. After the closest examination and calculation, I could never make it seem possible that the spermatheca contained more than half a million ripe sperm-cells at one time. Still, we know one queen may lay from one to two millions of eggs, and sometimes as many as ten sperm-cells enter one egg in fertilizing it. I could also not make it seem likely that the sperm transmitted from the drone-cells should retain life and vigor for a number of years. Therefore I took it upon me to make microscopic examinations of the spermatheca of different queens at different times or seasons; and I found that the spermatheca of a virgin queen contains a transparent opalizing fluid, with floating cells, the same being seedless. A fertile queen has in her spermatheca a milky-white fluid with spermatozoa, or finished sperm-cells, and also unfinished cells with seeds, the same being the spermatozoa in process of development."

Mr. Metzger makes here a distinction between finished (or ripe) sperm-cells, and unfinished (or growing) cells. Such a distinction has not been made before by any one, to my knowledge. Even Prof. Cook speaks of the sperm-cells in a general way only. Mr. Metzger adds:

"Furthermore, I find that the contents of a queen's spermatheca, during the season of her greatest activity, is a thin fluid, and, under the microscope, the ripe sperm-cells immediately show signs of life, while during that part of the season when a queen is not fully employed, the contents of the spermatheca are a thick fluid; and the ripe sperm-cells show life only when the contents are first somewhat diluted with weak salt water. During the winter season, the contents of the fertile queen's spermatheca are a mass of sperm-cells resembling felt; and, even after adding salt water, as before, they could not be made to show any signs of life. Fertile queens always have unfinished cells with seeds present in the spermatheca. After due consideration of the foregoing, I conclude that the spermatheca is a gland, producing cells, its functions being similar to those of the poison-gland, ovaries, pulvili, or the testicles of the drone. The latter also produce cells with seeds which lengthen out at both ends until they appear as the finished hair-like sperm-cells, or spermatozoa. The increase of the cells can go on only when sufficiently surrounded by fluid. Since the spermatheca of the queen, after once having come in contact with the drone, continues to produce cells with seeds, I believe it is reasonable to suppose that these cells develop into ripe sperm-cells, according as they are needed. The queen takes little nourishment in winter, and therefore the spermatheca is nearly dry and dead. The more food the queen takes, the more fluid her spermatheca gathers, and the more cells are produced, which develop into the ripe sperm-cells."

Long-continued applause followed these words, and gave proof that Mr. Metzger's work was valued.

Of other matters, I will only mention G. Lichtenthaler's interesting talk on "Formic acid as an antiseptic agent in the bee-hive, especially in its relation to foul brood." He tried to show that formic acid preserves the general health of a colony. He found that newly hatched bees had no traces of acid in the poison-sac; older bees had more and field bees a full amount. He thus showed why it was that the sting of a young bee is so much more harmless than that of an old bee. By robbing a colony of its flying bees, the best formic-acid producers, we prepare, so he claimed, a more fertile field for disease and fungus growth. He observed that bees, when working on buckwheat, produced the greatest amount of formic acid, and he deemed the buckwheat season the most favorable time for subduing foul brood.

The meeting adjourned to meet again in 1893, in Heidelberg.

REPORT OF THE BEE-KEEPERS' STATE CONVENTION, AT LOS ANGELES, CAL.

A REPORT BY THE RAMBLER.

The bee-keepers of California came up with smiling faces to the convention in Los Angeles on the 7th and 8th of Feb.; and, although there were dripping skies a portion of the time, the smiles held out. Although rain in February does not certainly presage a good honey-yield, it is a straw that points that way, and straws of that nature are eagerly grasped for by bee-keepers.

Pres. McIntyre and wife were among the first to arrive; and the world and the raging Sespe seemed to have used them well during the past year, and their greetings were cordial to all.

The gavel rapped the buzzing crowd to order at 10 A.M. on Tuesday.

The two hours before noon were nearly all taken up with reports and routine business. This out of the way, and lunch attended to, all were ready for the afternoon meeting at 1:30. Meanwhile the old Southern California association had met at 1 o'clock, and, after a few resolutions, remarks, etc., the few members of that organization who were present voted unanimously to merge themselves into the State association. The latter, when called to order, accepted the disbanded organization, and enrolled their names all in good standing upon their books. There may be a few who were not present who may be dissatisfied with the order of things; but the State organization has upon its banner the words, "With malice toward none, and charity for all," and, by its deeds, hopes to advance the cause of apiculture on the whole Pacific coast.

President McIntyre's annual address reviewed the past year, dwelt upon adulteration, and

advised every bee-keeper to join the Bee-keepers' Union, and strengthen it for a good work. In speaking of the exhibits at the World's Fair, he stated that space had been secured for an exhibit of the honey yield of 1893, and he hoped bee-keepers would respond liberally, and make a fine display; and he himself or the secretary would receive all offers of exhibits, and see that they were collected and forwarded. After the address, several donated 50 and 100 lb. lots. This honey will be delivered in Chicago free of charge, and in original packages. It will then be put up in fancy glass jars, and at the close of the exhibition it will be sold or delivered to other parties as may be desired.

The next upon the programme was a paper upon new plans for marketing honey, by J. H. Martin, which was followed by an interesting discussion. It is evident, from the signs of the times, that a radical change is needed in the marketing of fruits and honey, and a more even distribution of them over the country.

Prof. C. W. Woodworth, entomologist from the State University, made a short address, and afterward answered many questions. The University was ready to meet the bee-keepers more than half way in the endeavor to advance the cause; and if nothing is done, it will clearly be the fault of the bee-keepers themselves. At the close of the address a vote of thanks was extended to Prof. W. He was also elected an honorary member of the association.

"Chemical Composition of Honey," by Mr. George W. Brodbeck, closed the afternoon program.

In the evening Mr. Arundell's paper, "Economy in Bee-keeping," brought out a long discussion. Many found it economy to requeen their apiaries after the honey season. There is usually a large loss of colonies in the commencement of a honey season, from the loss of queens, and sometimes this amounts to as much as the ordinary winter losses in the East; and by carefully requeening, the loss, in a great measure, would be avoided.

The discussion drifted into the hive question, and a few expressed themselves as favorable to a shallow hive. The Hoffman frame had not been tested, but will probably be used more or less during the coming season.

At the close of the evening session there was a general hand-shake, and Mrs. McIntyre delighted the members by sitting down to the piano in the room and giving a few bee-keepers' songs appropriate to the occasion, which were heartily enjoyed and enthusiastically applauded.

SECOND DAY.

The bee-keepers began to assemble again at an early hour. The first business was to memorize Congress, through our representatives, to push forward the Paddock pure-food bill; also a resolution was introduced, asking the Legislature to aid the association in the sum of $300, to be used in the publication of the proceedings, and for collecting statistics.

Mr. W. A. Pryal was instructed to draw up such an act and present it to the proper committee at the State Capitol at Sacramento, soon.

Mr. H. E. Wilder read an interesting essay upon birds that are injurious to bees and fruit. Mr. R. Touchton followed with a paper upon bees and fruit. This brought out many valuable points, where birds are a great damage to apricots and peaches, in their propensity to prey upon the laden bees; but the greatest damage is in the destruction of the swelling buds, not only destroying the prospective nectar-laden blossom, but the fruit as well. The only remedy is the shot-gun, which is freely used by many orchardists.

The subject of adulteration came up several times, and was thoroughly denounced There was regret expressed that Prof. Cook had lent his hand favorably to the sugar-honey discussion. California bee-keepers have but cold comfort for that plan. During the discussion of these vital points to bee-keepers, Mr. Brodbeck introduced the following resolution, which passed unanimously:

"*Resolved*, That the California State Bee-keepers' Association, in convention assembled, express by a vote of thanks their appreciation of the interest displayed by GLEANINGS IN BEE CULTURE and the *American Bee Journal* in their determined opposition to the adulteration of honey in every shape and form that has thus far been presented."

In a further discussion of the World's Fair exhibits, it was resolved that we recommend to the State World's Fair Commission that Mr. W. A. Pryal be a suitable person to represent the interests of bee keepers at the World's Fair, and install the exhibit. Several bee-keepers looked upon this as quite appropriate, for Mr. Pryal is a native Californian.

At the opening of the afternoon session, the following officers were elected:

J. F. McIntyre reëlected President.
Geo. W. Brodbeck, V. P. for Los Angeles Co.
J. W. King, " " Orange "
M. H. Mendleson, " " Ventura "
H. Trickey, " " Inyo "
C. C. Thomas, " " San Diego "
F. H. Hunt, " " San Bernardino
W. A. Pryal, " " Alameda "
J. C. McCubbin, " " Fresno "
G. B. Woodbury, Treasurer.
J. H. Martin, reëlected Secretary.
Executive Committee, L. T. Rowley, A. Barnett.

The final session closed with a paper by L. T. Rowley, upon the honey-plants of Southern California, and a paper on the San Francisco honey markets, by Wm. Styan.

Upon various motions the secretary was instructed to correspond with manufacturers of cans, and get their lowest rates for enough cans for the entire association, and to inform the association of the same by postal card; also to correspond with all of the leading dealers in San Francisco and the East, and get best offers, and to inform the members by postal card; also to correspond in relation to supplies in carload lots from leading Eastern dealers, and to inform the members by postal card; also to correspond with the lady managers of the World's Fair exhibits for Southern California in relation to the exhibition of honey-plants. Upon this point the secretary kicked, and the meeting adjourned in confusion. The next meeting will be held in Los Angeles, upon a call from the executive committee.

There were but few bee-keepers' supplies upon exhibition. Mr. C. W. Metcalf, of Santa Paula, had a very ingeniously constructed automatic reversible extractor upon exhibition. The Stewart honey-boxes were also on exhibition. Mr. Brodbeck exhibited a new patented smoker, which attracted much attention. A carload of supplies from Medina, O., arrived while the convention was in session, and was partly unpacked in the store of G. G. Wickson, where many embraced the opportunity of looking the goods over. The Cowan honey-extractor seemed to be the center of attraction. All expressed themselves as astonished at the amount of bee-traps that can be stored into one car.

When the bee-keepers bade each other farewell they all felt that a very profitable session of the State association had been held.

JOHN H. MARTIN, Sec.

JAKE SMITH'S LETTERS.

THE PALLUS BEE-HIVE.

JAKE SMITH.

A. I. Gleenings — deer Sir: — I herd from you threw a man whitch cum to our house. He told me how you was a grate bee-man, and told me to right and tell you about our bee-pallus and yude print it. Weave had the pallus ever sints last spring. The way of it was this. A man cum along with the pallus onto his waggon, and sed how he hear I was a 4-handed farmer, always up with the times, and how I kep so menny bees, and he wanted to show me the latest improvement in bees.

It was a pallus to keep them in. You jist put a common scap, with a swarm of bees in, up on top of the pallus, and then thale bild down and fill up the pallus. Then they is a door to it, where you can open the door & jist cut out a peace of hunny enny time. You see that's reel handy for the wimmin fokes, espeshelly when cumpenny cums, & they can take a plate and a knife and git all they want with hot biskit for supper.

JAKE AND THE PATENT-RIGHT MAN.

He was a reel nice man, with a shiny hat & good close. He was sum kind of a agent for the pallus cumpenny that made the palluses, and was a taking it to sum big exabishen. He was verry polite to the gals, and they was considerable took with him. He knode all about bees, and diddent seem a bit stuck up, but jist tocked to me as common as you pleas. So I ast him to stay all nite. Along at first he diddent ee how h cood; but I irged him, and at last he thought one of the animals in his teem was sum tired out, and mabee he better stop. He woodent miss having the pallus git to the exabishen for fifty ($50) dollars, but if his teem give out it mite hender him more than to stop. So he stopt.

He was reel soshable like, and toald me lots about bees and about the pallus. He sed how a man the name of Bramler hed a pallus, & I disremember rightly now jist how much hunny he got from it, but tenny rate he got from that pallus morn I ever git from all the swarms I ever took up enny year. I trubble with bees is, that the worms eats them up. So the pallus has a slantin bottom that rolls out the worms.

The price of the pallus with a farm rite was 25 dollars. In the mornin he was afeerd the bad roads was too much for that 1 animal in his teem, and so he diddent know but hede hev to giv up gitten the pallus to the exabishen. He hated to, but he hed to; & seein how it was, and how he coodent go no furder on ackount of the animill, hede make me a discount onto the price; and as he wanted to interjuice the pallus into the naberhood, hede make a nuther reducktion, & I got the pallus for 15$, and he sed I coodent make ten dollars no easier, and he was a reel nice man. That's how I cum to git the pallus. It wuzzent him that toald me to right to you, but a nuther man that was here. He sed his name was do littel. He diddent seam to kno a powerful sight about bees, but he took a celebrated interest into that pallus, and sed youde like to hear about it.

Respectably yours, JAKE SMITH.

P. S.—Pleas send me a paper when you print it.

RECOLLECTIONS AND EXPERIENCES.

SOMETHING FROM AN OLD BEE-EDITOR: HOW HE BEGAN BEE-KEEPING, ETC.

In an article that appeared Jan. 15, 1892, in GLEANINGS, we promised to tell your readers something about our methods and how we apply the Hoffman frame. Just after we penned that article, friend Root desired us to write up Mr. Hoffman's place and methods. We complied, and the season advanced until we did not again get an opportunity.

The writer, a boy of sixteen, began bee-keeping in April, 1866—a veritable novice, fully enthused by reading N. H. & H. A. King's "Bee keepers' Textbook." It is needless to tell you that all obtainable books on bee culture were read and re-read, and articles in periodicals on the subject were carefully searched out. Unfortunately, much that was, and frequently now is, written for the papers is worse than useless, and the inexperienced can not always secure the wheat and reject the chaff.

We soon made the acquaintance of that grand old man, Moses Quinby, than whom few men labored more unselfishly or gave more freely of their carefully gathered experience, to advance the true interests of scientific and practical bee-keeping. Indeed, his door was ever open and his table always spread for all who saw fit to visit him, and the number was legion.

We purchased a black colony in a box-hive. We secured H. A. King's American hives, into one of which the only swarm, which came rather late, was hived. Then on the seventh or eighth day we transferred the colony from the

box hive into frames. Well do we remember the trepidation, anxiety, and real labor connected with that transfer. Indeed, it was a great undertaking, for the hive had several cross-sticks, and the combs were heavy with honey.

Friend Root tells us that most bee-keepers change hives about once in ten years. The rapid strides in advancement make, or did make, it necessary, and we were no exception, for we soon discarded the King hives and adopted the old Quinby hive and frames, described in "Quinby's Mysteries of Bee-keeping," edition of 1866, pp. 68 to 70. This hive held eight frames, and had a honey-board, or board to cover the brood-chamber, one-fourth inch above the frames; and how these boards used to snap loose in cold weather, and start up a lively row with hybrid bees, made vicious by the use of tobacco smoke, applied through a tin fumigator held in the teeth! Quite often the dampness of the breath extinguished the fire, and then how we did "catch it"!

During the second season we purchased a fine Italian queen of Mr. Quinby, and have never been without Italians since. Indeed, we doubt whether on this globe a better bee exists.

From 1866 to 1870, bees seemed to winter very easily, either in cellars or on summer stands. Strangely, during that period we had little or no loss.

Reading an article recently by friend Doolittle, entitled "Wintering Under Snow," leads us to narrate an experience we had during the period named. We had bought a dozen or more colonies in box hives, and our bees were on the King frames. We packed the caps with hay or straw, and placed the hives on the east side of a high stone wall. Moderate weather prevailed, but no snow until January 1. On that day came a heavy fall, and this soon drifted the hives out of sight. We then cut great blocks of snow and placed them upon the wall, thus increasing the bank, until all the hives were under eight to ten feet of snow. Many were sure the bees would smother; but Mr. Quinby said they would not, and we relied upon his statement. Toward the last of March the weather grew warm, and we had some fear that water might settle around the hives. We accordingly shoveled them out. The snow had thawed away from six to fifteen inches all around the hives, each standing in a little cavity. When the first one was uncovered we listened for signs of life, but could hear none. The hive being inverted, we saw bees in the most dormant state we ever beheld; indeed, they were about torpid, and it took nearly an hour to get them to flying briskly. This condition existed with all those bees, and they came out in splendid condition.

We never again tried this method, for the time of arrival and amount of snow are too uncertain to calculate with any surety upon results.

Time brought changes. We visited Mr. Quinby quite often; we saw his new standing frames in large cases, called non-swarming hives. We never could learn to like those frames, so planned as to use the large cases for side and top boxing with the old-style frames. We succeeded tolerably, and for some years we selected sixteen of our best colonies and placed them in these cases, and made a yearly average of one hundred pounds of box honey per colony, although invariably one or more of the number would get such a swarming fever that they produced little or no honey.

About that time the State Agricultural Society offered a prize of twenty dollars to the largest yield of box honey produced by one colony, and we secured this prize for two seasons; one year producing 205 pounds in four-pound boxes.

On one occasion, before the invention of comb foundation, we placed a strong colony in a hive four feet long. This family built about twenty sheets of comb and gave 317 pounds of extracted honey, besides enough left in to devide and winter two colonies.

In those days white clover gave large yields; now, with pastures white with blossoms, no honey is gathered. Melilot clover was then unknown; now the Erie Canal, and the railways and highways are lined with it.

After 1870 the mortality during winter and spring was enormous, and we had our share of losses. This deterred us from undertaking the business on a large scale.

On more than one occasion we inserted an extra pair of followers and turned the seven or eight brood-frames a quarter way around, providing a covered passage from the brood-nest to the outer air, and packed four sides and the tops with chaff. This plan seldom worked well, especially if the snow accumulated around the hives, and was sure to prove fatal if the hives were buried with snow and subsequently thawed out. We then learned that, with such warm packing, the hives and entrances should at all times be uncovered. Even in cold days, if the hives were surrounded with snow to the roof, and the roof exposed to a strong sun, the bees would get very uneasy.

Thus for some years we had variations of success and failure—the former in summer and the latter in winter. With moderately strong colonies we never failed to get large crops in ordinary seasons; but often considerable of the summer passed before colonies were populous enough to accomplish much.

Just prior to 1870, the Northeastern Bee-keepers' Association was organized, and the writer was soon and for several years made secretary. The subject of wintering was yearly brought up, and developed animated and lengthy discussions with deep interest.

Julius Hoffman moved to Fort Plain, only about four miles from our place, in 1873, and we visited him toward the latter part of that season. Never can we forget our surprise and admiration at the wonderful progress he had made and the rapidity with which he manipulated his colonies. After that, at frequent intervals we visited his place. We soon became convinced that the frames he used possessed advantages that we could poorly afford to forego. We accordingly made several hundred frames, Hoffman style, the size of the old Quinby, and transferred our combs. As we already used a side-opening hive we thus secured the advantages of rapid handling.

The interest in bee-keeping was now becoming general and animated, and we soon began to advertise and grow large numbers of Italian queens for the market. In this latitude this occupation is attended with much labor and expense, as the winters are long and severe, and the queen-rearing season short. A large correspondence led to many inquiries for other goods, and finally we built a factory and began to supply various goods used in the apiary. The radical and frequent changes in hives and fixtures made it hazardous to manufacture stock ahead; thus, during the busy season we were often sadly overworked. A couple of rather unsuccessful ventures, induced by lack of employment during the dull months, led to discouragement, and finally a railroad was surveyed through the buildings and premises, and we were constrained to sell out the apiary and bee-keepers' supply business, together with the monthly *Bee-keepers' Exchange*, to Houck & Peet, who assumed control late in 1881. The

short career and sudden death of Theodore Houck compelled us to take back many of the goods in order to liquidate the estate and secure a final settlement.

For nearly one year we were entirely without bees; but the transition was radical, and our love for the pets again asserted itself.

Having now had considerable experience, a large contact with practical bee-keepers, and a thorough knowledge of the many hives in use, we concluded that we should be able to choose a good, practical, simple hive, adapted to the needs of bees and the requirements of box and extracted honey. After mature study we made and adopted the hive that we now have; and let us assure your readers that, although we have used it more than ten years, we must see many and positive improvements in a hive to induce us to change again. In our next we hope to describe our hive, and give reasons for its shape, construction, and management.

J. H. NELLIS.

Continued.

BEE-ESCAPES.

A NEW IDEA OF THEIR MANNER OF WORKING.

I find that no one in GLEANINGS has yet given the true principle upon which the bee-escape is supposed to work. The super from which it is desired to rid the bees being shut off from the heat of the hive, it would seem that, when the weather got cool, the bees would go down much faster; but such is not the fact. It may then take days instead of hours for the sections to be cleared. The true reason is, that, when the bees find they are separated from the queen, they get panicky, and leave forthwith in pursuit of the queen. It is a mistake to suppose that the ragged edge of the tin or paper prevents the bees from going back into the sections; but the fact is, the cause that induced them to leave prevents them from going back. Now for the proof: You will find inclosed a piece of tin. This was formed over a 20-penny wire nail. This I tack over a hole on the under side of a board. This is my bee-escape. It will be seen that the bees can go one way as well as the other. My section-cases all have glass. I put on the escapes in the morning, so I could watch them, which I did closely. Some will miss the queen very soon, and the sections will be cleared in two or three hours. Others will remain quiet for several hours; but when they discover their isolated position they will be seen in a perfect panic, which they keep up until the last bee leaves the sections. Among others I put sections, containing about 60 lbs. of honey, over a board fixed with three of these tins. The next morning when I took off my sections I found bees enough to make a fair swarm, clustered all over under the board. There were many bees deep over the tins. They had commenced comb-building; but not a bee had gone into the sections. I have used these tins through the past season with unvarying results. In no case did the bees go back into the sections.

I believe that a zinc queen-excluder, if placed on an empty section-holder, and the zinc all covered up but a narrow strip, would make a good bee-escape. WILLIAM HALLEY.

Rockton, Ill., Jan. 23.

[It is very possible that you may be right, and we hope those of our readers who have made observations in regard to the actual workings of the bee-escape will let us know what they think about it. Another summer shall not go by without our fixing up an observatory hive, to watch the actual operation of the various bee-escapes. However, even if your point is true, would it not be better to have something like the Porter, so the bees will actually be prevented from going back, even if they should desire to do so? The Porters, who have conducted a long series of experiments along this line, will doubtless be able to give us some information.]

SOME BIG HONEY YIELDS, BY AN EXTENSIVE BEE-KEEPER.

FRANK M'NAY, OF MAUSTON, WIS., A BEE-KEEPER WHO PRODUCES TONS AND TONS OF EXTRACTED HONEY, TELLS US SOMETHING ABOUT THE AVERAGE YIELD OF HIS LOCALITY.

Ed. Gleanings:—One year ago I was enjoying a long-desired visit at the "Home of the Honey-bees;" and while I recall the pleasant visit, I also remember a long-neglected promise to let you "hear from us." But as I have not only had the care of seven apiaries, but have also done seven thousand miles of rambling during the year 1892, it has left little time to spare. Although you may think, by the report I sent you for statistics about August first, that we have had little to do, we had a very good fall crop, and I secured about *nine tons* of excellent honey, all stored *after* the first of August.

We often have a failure of a *part* of the honey resources of Wisconsin; but after an experience of 17 years I can say that I have never yet had a failure for the entire season; and it is the never-failing crop that counts up on the grand total, as can be seen by placing my own record for the past 16 years with that of the famous Sespe apiary, of California, which, although it shows some marvelously large yields, yet the total average for 16 years is only about 73 pounds, mostly extracted, I suppose (see GLEANINGS, page 774, 1891), while my own average, as shown by inclosed table, is 93 pounds, a large per cent of it comb honey in pound sections; and lest some may suppose this average to be only a few hives, I will say the number has averaged about the same as the Sespe apiary, and that my crop for the past ten years has not been less than 10,000 pounds. My best crop was 23 tons, and best gain of one colony 31 pounds in one day, and 335 pounds in one season.

These results were from an ordinary colony that had not been helped in any way from other colonies.

Average per colony for 16 years.

Year.	Sespe apiary, California. Pounds.	McNay's apiaries, Wisconsin. Pounds.	Per cent comb.
1876	200	75	100
1877	000	125	50
1878	275	20	00
1879	000	50	60
1880	175	125	50
1881	20	150	100
1882	15	80	75
1883	40	105	40
1884	100	93	50
1885	000	81	55
1886	175	143	40
1887	10	59	45
1888	50	114	12
1889	36	148	7
1890	60	44	00
1891	21	86	00
Total average, 73 lbs. in 16 years.		Total average, 93 lbs. in 16 years.	

THE COWAN EXTRACTOR.

I now wish to say a few words in regard to the Cowan extractor, as my experience in extracting 9 tons has brought to notice one feature that I did not notice on first trial. We had used it but a few times when one morning, on starting for an out-apiary, I was surprised to see my assistant (who turns the machines) putting the Cowan into his buggy. I asked, "Why are you taking that, as there is an extractor there?" He replied that the other machine always daubed his clothes, as if they were sprayed with honey, but that he could use the Cowan and keep clean; and I soon noticed that he was right; and I feel sure that any one who has had trouble by this will appreciate the Cowan. FRANK MCNAY.

Mauston, Wis., Feb. 10.

[Something over a year ago Mr. McNay called at the Home of the Honey-bees. At the time, we were "down sick with the earache over home." The pain was about as much as we could bear without groaning; but hearing that friend McNay was over at the shop we sent over word, asking him to make us a call. We enjoyed quite a pleasant visit with him, despite the pain. Mr. McNay gave us quite an interesting account of how he manages bees on such an extensive scale, and we asked him to favor us with an article occasionally, and the above is the first one of the series, and we hope it will not be the last one.]

BALDENSPERGER'S LETTER.

SAMSON, AND THE HONEY FROM THE LION'S CARCASS; THAT MAMMOTH HONEY-EXTRACTOR, ETC.

In many parts of Africa the smoking of tobacco is prohibited by order of the Mohammedan Sultan, Il Moolah Hassan, of Marocco; and there are some tribes that will not even intermarry with those who smoke. In Abyssinia the Christian kings forbid tobacco altogether. King Menelek cuts off the noses, lips, and hands of such of his subjects as use tobacco again; but in the south of Algiers lives a tribe of Arabs, the Mozabites, or Beni-M'zab, in seven cities. They differ somewhat from other Mohammedans, particularly in the fact that they do not adore all saints; and, contrary to Arabic custom, they drink no coffee and never smoke tobacco. Some of them do, though, when they leave their southern republic and come north. They are a very commercial people, and at Algiers they are known as the most straightforward business men, in consequence of their abstinence from strong drink. Honey comes in as a substitute; and it is for that reason that they buy thousands of pounds of it, which they send off to their dry homes. In order to remain in their community they are obliged to go home once in a while. They never have any luxury whatever about them; and, though very wealthy, they go about in coarse cloth, and are called "Muchew" by the natives, which means "small one." They are very well versed in their history; but the Mohammedans proper hate them and call them the "Fifth ones," as they do not belong to any of the four recognized sects of Islam—Malki, Hanuafi, Shafi, and Hanbali.

On page 815, Nov. 1, the proof-reader suggests that flies, etc., can not develop in arid climates like Arizona and Palestine, as is shown in the case of the carcass of the lion. Now, Palestine, though very hot, is just the place to develop those very troublesome flies; and the identical rock of Etham, where Samson was, is full of caves where the flocks resort in the spring of the year; and during the day time the women churn the milk and dry the cheese in the sun. Such places are literally filled with flies. And, again, the road Samson took, according to the 14th chapter of Judges, is well known to me. The new railway, from Jaffa to Jerusalem, crosses that road. However, last year we often went that way. Eshtaol, now Eshna' et Zora, or Sar'a, have large apiaries; and the way to Tibnah, the Bible Timnath, is full of springs and damp swamps, where all kinds of mosquitoes and other vermin thrive; and bees, also, do well, in consequence of the luxuriant vegetation and plenty of water. The carcass of the lion, which Samson had killed some time before, must have been thrown beside a colony of bees already established there in the rock or behind a wall, and Samson went to look at the carcass in the day time and found the bees flying in and out, so he took some honey. As a matter of course, the fact that honey was already found in the colony of bees proves that the colony had been longer there than the dead beast. Then, again, in chapter 13, 7th verse, Samson's mother seems to have accepted the oath for Samson not to eat any unclean thing. Samson, a Nazarite, would have disdained honey from the carcass itself; and his parents, too, ate of it. It was probably the case with the language then as it is now—the honey was *near* the carcass, and the writer puts it "the heart of the carcass," meaning thereby that it was close by. Perhaps the carcass was even thrown upon the rock, and the bees had to seek their way through the next morning. Panthers were still found around there till recently; but the noise of the railway has driven away those felines from the hitherto abandoned mountain-gorges. Carcasses never dry up, but decay. The skeleton alone remains. Numerous jackals do away with dead cattle in a short time.

That mammoth extractor, p. 835, Nov. 15, is, of course, unique, but I do not suppose it will extend very far beyond Cuba, unless such immense honey-fields are found elsewhere. An extractor holding four frames is quite large enough to throw out hundreds of pounds a day.

I did not think that people of the editor's age would begin "wheeling." Perhaps it may become more general: but just now the prices are a good deal too high.

Mr. S. F. Trego's bees, I suppose, have been greatly frightened by the six kicks. That is why, I presume, they did not sting. Why should they have acted like flies, with such rough treatment? It can be accounted for only by their great weakness. A double-story hive full of bees would not act so. Any race would be quick at stinging.

Page 882, your proof-reader, I think, is quite right. Keep the romantic names. They tell very well the history of bygone days. In the old Bible lands many old names still exist, such as Beni-Barak, Jehud, etc., existing before Joshua took those cities. Then, again, many cities changed their names under the different nations successively governing Palestine. Do not such names tell us of the antiquity of the places, and, at the same time, to a great extent help to constitute written history, though incomplete? The story of Samson, above alluded to, shows also how useful it is to have kept the very same names. Some names, too, remind us of the Roman occupancy; as, Colonia, Castle, Cæsarea, etc.; while others recall the Crusades, such as Sinjil, a corruption of St. Gilles; Wallage, a corruption of Village; St. Jean d'Acre, etc. Also the Greek domination has left names from that language. Thus, the old Sichem was changed into Neapolis (new city) by the Greek rulers, and now retains that name under the

Arabic form of Nablous—a very flourishing central town.

Mr. W. Grahame, p. 917, says, "A queen must be fertilized within 21 days, else she will be barren." I have 15 per cent fertilized between the 21st and 30th day, giving, excepting one, the most excellent results as to prolificness, and, in consequence, furnishing hives crammed full of bees with plenty of surplus honey.

PH. J. BALDENSPERGER.

Nice, France, Jan. 10.

BEE-PARALYSIS.

J. A. GOLDEN ANSWERS QUESTIONS RELATING TO THE ATTACK ON HIS BEES.

In GLEANINGS of Feb. 1, page 93, I see that the salt cure for bee paralysis is challenged. Permit me to say, that, in my article on page 888, I expressed a question in the following words: "If paralysis it was; who can tell?" It appears that friend Bartow has been led to believe that poison was the cause, and proposes certain questions for consideration, which I shall try to answer. His first question is:

"Might not the bees have been poisoned by visiting fruit-trees that had been sprayed?"

My answer is, I think not, because there has not been, to my personal knowledge, or from inquiry, a single tree in all this section of country that has been sprayed with poison of any kind; but if poisoned, it came from some other source; and the very first thing I thought of on that Sunday morning, when I saw the bees skipping out and dying, was poison; and if that was the cause, then bees poisoned act just as bees do that have paralysis. How do bees act when poisoned, anyhow? I can not think any one would purposely poison the honey-bee. Then, again, if poisoned, the same thing has been occurring all around for the past four or five years, but in a lighter form. I can not think the bees were poisoned.

Again, he says, "Might not the cure of Mr. Golden have been a success on account of less poison?"

If friend Bartow implies by this that my bees had poison in a mild form, he surely would have thought differently could he have seen those bees march out and expire.

Again, he asks, "Is salt an antidote for mild poison?"

We answer, Yes, for certain kinds; and we know that salt allays fever, itchings, reduces swellings, purifies and preserves, and, in our observation in the study of bee paralysis, I feel satisfied that the bee becomes feverish, producing an itching sensation, thus causing the hair to be easily withdrawn; finally the swelling of the intestines, resulting in death. I therefore firmly believe that ninty-nine out of every hundred bees in the first stage of the disease can be cured by a proper use of salt; and also quite a good share when in the second stage, or in the hairless condition; but when bees enter the third, or swelling stage, death is certain to follow.

In answer to his last question, I would say that bees usually go out of the hive to die during warm weather, but invariably die in the hive during the colder season.

SYMPTOMS OF BEE PARALYSIS.

In my experience and study of bee paralysis, I find that the first symptoms of the disease are first noticeable, so far as we have been able to judge, by the guard-bees at the entrances attacking the diseased sisters with a hustling movement as they go and come; and the diseased bee, in this stage, seems to enjoy this kind of treatment; and this indicates, to my mind, that the bee is feverish—a condition that produces an itching sensation, also causing the hair to loosen, and to be easily extracted by the bees in the hustling movement, as above stated. I also find that, when bees reach the second stage, or hairless condition, the guard-bees are more determined to drag them from the hive than at any other time. Further observations teach us that, as soon as the bee begins to bloat, she immediately leaves the hive and soon expires.

I have never found more than one queen that showed any symptoms of the disease, and in this case I spent much time with a large magnifying-glass watching the bees taking the hairs from her body until she became hairless, and resembled a black wasp. Jan. 26, 1893, she still reigned over a strong colony of beautiful bees, and can be seen during the coming season, should she survive the winter.

HOW TO CURE.

In conclusion I want to say to all who have or may have bee paralysis among their bees, try one or two colonies thus: As soon as the bees begin to fly freely, make a strong brine and thoroughly wet the bottom-boards of these hives once a week, so that, when they dry, they will look frosty; also freely spray the combs and brood with a solution of salt water that you can taste quite a little salty (not strong), once a week, during the season, then report the result; and if you don't forget to apply the remedy, I am sure your report will be in favor of salt. I think the time is near at hand, if the disease is not checked, when apiarists will have cause to look for other occupations. J. A. GOLDEN.

Reinersville, O., Feb. 8.

[Mr. Golden describes exactly the disease that visits our apiary occasionally; but it is strange that it has never broken out in our yards in such virulency as reported by Mr. Golden on page 888, Dec. 1, last year. We always (except at out-yards) keep down the grass at the entrances with salt. After every rain, the bees probably get a little of this salt. At our out-yards it has been a noticeable fact that we have had more cases of this bee paralysis. Salt is a mild antiseptic, and it seems probable that it may operate as a check if not an actual cure.]

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

BEE-KEEPING DESCRIBED FOR THE GREAT OUTSIDE WORLD.

One of our correspondents sends us the following, which he says was clipped from the Chicago *World:*

KEEPS BEES IN HER BEDROOM; A STATEN ISLAND GIRL WHO FINDS THE INDUSTRIOUS INSECTS QUIET COMPANIONS.

There is a girl in Staten Island, N. Y., who has kept a hive of bees in her bedroom during the winter. She recently said that they were the most unobjectionable of companions. They are quiet, orderly, and attend strictly to their own affairs. When the warm weather comes they will be set outdoors, where there are beds of mignonette and other sweet-scented flowers, which the bees fully understand are planted for their especial use. This hive of bees is the nucleus of her contemplated bee-farm. Last summer they supplied her weekly with 36 lbs. of honey.

For each pound of honey she received 30 cents. The profits of bee-keeping are great, the cost small. The labor of honey-raising has been materially lessened for the bees by modern improvements, and

they seem proportionately grateful. The bees no longer make their own cells, which are produced by machinery out of wax. These artificial cells are placed in the hive, and the bees seem to be glad to get rid of the labor of making them. Immediately they get to honey-making. This business they conduct alone. When the cells are full the hive must be watched from without, lest the bees begin sealing them up, which they do in order to lay up their winter's food.

To guard against this, additional cells are put on top of the hive, called supers. In these the bees deposit their extra store, and this is reserved for their winter outfit. When the bees begin to seal the cells, the box is removed, a small machine is put inside, which is set vibrating, and this empties the cells of their honey, which is drawn off, and the cells, having been drained, are put back to be refilled. This young woman says that her bees know her, and are as tame to her hand as doves. The occupation of honey-making has proved pleasurable and profitable.

[No doubt there will be many a broad smile as our readers look over the above, which, very likely, is destined to go the rounds of the newspapers. If everybody takes down the statement about 36 lbs. of honey per week, at 30 cts. a pound, there will probably be a sudden stampede for bee-books, journals, and bee-supplies. Let me bid these friends go slow, however. Instead of 36 lbs. of honey per week, and not much work either, a great many of our veterans would be glad to get 36 lbs. on an average during the whole *season*. In fact, I know of several who have not done even as well as that, and they have worked hard too. The plan of putting a "vibrating machine" inside of a box of honey is a pretty big joke. Well, we can be thankful that the newspapers have a good opinion of us and our occupation, any way.]

A. I. R.

BICYCLES FOR LADIES.

The following bit of eloquence and truth we clip from the Philadelphia Germantown *Telegraph:*

Now, with the ladies' bicycle she can go where she will, when she will, and how she will. Her exercise is out of doors, where she may feel of God's sunshine and breathe of his unvitiated air; the exercise may be as gentle or as hard as she has a mind to make: she can go four miles or forty miles in this direction or in that direction, and as fast or as slow as suits her own sweet will. The hills and dales and surrounding country, so prosaic before, take on new life, new interest, now that she has learned to ride. There is no horse to shy, no groom to employ, no stable to provide. Her wheel is always ready, always obedient, always her slave—more, it is the most fascinating and invigorating outdoor gymnasium that was ever devised. With its aid a glow can be brought to the palest cheek, and a rich, coursing, healthful circulation to the most stagnant blood.

Well, now, I can not say, from personal experience, as to the women-folks; but so far as *I* am concerned, the above is no exaggeration. It is true, every word of it.

PROF. LOWE AND HIS BOYHOOD.

I am particularly interested in boys (my children are all boys); and when I read in Gleanings about Prof. Lowe I wanted to give you a short sketch of his boyhood. When very young his father deserted his family of three small boys; the mother proved incapable of taking care of them, and threw them on the town. My husband's aunt (Mrs. Perkins) was elected to have "Thad" in her family; and as she already had more boys and girls than a drinking father could support, poor little Thad had a hard time. As soon as he became old enough he ran away and joined a show. After a time he wrote back, "Great oaks from little acorns grow," and nothing more. They heard of him from time to time through the papers, and he was always working *up*. Surely his words have come true. He takes his family to the White Mountains now, and I often wonder whether he tells them of the misery he endured there. When a child he was delicate, and different from other children, and even then never liked work on the farm. Mrs. G. E. Balch.

Harmon, Ill.

[There are several lessons we may learn here. First, having a hard time during boyhood does not always spoil a boy. On the contrary, it may serve to develop his best powers. I sincerely hope and trust there has been a temperance reform in the locality where poor Thad was brought up. Being deserted by his father, and then cruelly treated, probably, by another drunken father, was enough to make any boy run away. I presume that, like most boys, he disliked to write letters; but thinking that his friends would like to know something about him, he finally got up energy enough to write the very short letter you mention. It is almost equal to some of the schoolboys' compositions we read about. Very likely his delicate frame was unfitted for the hard work of the farm. I know something about that myself; and even when I was sixteen, my father said I was not worth 25 cents a day in the harvest-field. But I had a natural love for farming and agriculture, notwithstanding. The matter was not presented to me in just the right way at that time, and perhaps due allowance was not made for a boy so thin and spare, who was growing rapidly. Prof. Lowe now has a taste for agriculture—at least, you would think so if you were to see his grounds in Pasadena; and I think, too, he must have a taste for almost all outdoor industries. His recent achievement of building an electric railway to the summit of Wilson's Peak is along in that line; and when he rides up to the summit on his own car, and looks off over the landscape and the ocean, I wonder whether he thinks of that short letter he wrote home to his friends. I do not know any thing about it, of course; but I hope he remembers, too, the great God above, who has given him mental and physical strength and endurance for all that he has accomplished during the years that are past.]

A GOOD-NATURED MAN, AND HOW HE BECAME SO.

I have not used a penny's worth of medicine in forty years. I don't need any—never expect to use any—haven't used tea nor coffee for more than fifty years, but have used milk, warm from the cow, for about 65 years.

When old enough to milk I said to my mother, "Our calves and pigs have new milk, and they look better than the neighbors' calves and pigs. I don't see why new milk wouldn't be better for children." "I never heard of such a thing; it would make you sick," said she. But I began; and, though the taste at first was very unpleasant, I persevered until I liked it. I still use it at every meal—good Jersey milk. I will send you one dollar and fifty cents to apply on Gleanings. It seems that, by the marking on the margins, the two numbers brought me day before yesterday were read in Burke, then sent to Bellmont Center; and even when they got to this neighborhood they were read by a considerable number of persons, who thought they were "just splendid," before they reached me. I have no fault to find, for all the people all over the county, nearly, know whatever reading-matter I chance to have is free to everybody who chooses to read. Whenever I do get a number I read first the article headed "Ourselves and Our Neighbors." I should read

extensively on bee culture, as I have a few bees—78 swarms—in good shape.

W. H. J. DREW.

Chateaugay Lake, N. Y., Jan. 24.

[Well, friend D., I should think you *were* a good-natured man. We are glad to have GLEANINGS read, especially when the readers seem to enjoy reading it as do those you mention. Well, if *you* can stand it, all right; but whenever any numbers of GLEANINGS get lost or worn out, just apply to us and you shall have more free of charge. Oh! I want to say to our readers, that the explanation of your wonderful good nature lies in that opening paragraph. You learned when a boy that new milk, right from the cow, was good to drink, and cheaper than doctors' stuff; but, by the way, do not be too sure that you will never need medicine. I sincerely hope you may not; but you remember the old injunction, "Let him that thinketh he standeth, take heed lest he fall."]

A SAD LETTER FROM A BEE-KEEPER'S WIFE.

Dear Mr. Root:—I have sad, sad news to write. My dear good husband, John D. Adams, was drowned Aug. 21, while trying to save our hired man's life. They were both drowned. We all know he died *trying* to do his duty; but, oh it is so hard to give him up! it was such a shock on us. If he had been sick, and I could have stood by his bedside, knowing that he *must* go, it surely wouldn't have been so hard. Mr. Root, no one knows what it is to part with a dear good companion until the trial comes. Just a few weeks ago our home was lively and cheerful, but now it is sad and lonesome. Oh how we miss him!

A precious one from us has gone;
A voice we loved is still;
A place is vacant in our home,
Which never can be filled.

God, in his wisdom, has recalled
The boon his love had given;
And, though the body slumbers here,
The soul is safe in heaven.

I beg an interest in the prayers of the bee-keepers that I may ever do my duty in raising my fatherless children. He loved his bees so dearly we can not bear to part with them, so we intend to keep them, and do our best with them. Oh so many responsibilities I have to shoulder! Pray for me. ANNIE F. ADAMS.

Nira, Iowa.

[Most certainly will we remember to pray for you; and while doing so we can rejoice that yours is a faith that goes beyond this world. Just at this time, when floods are likely to occur with the breaking-up of the ice and the melting of the snow, it behooves us to be careful about taking risks in water. Many a person has been drowned, when he evidently scarcely thought of being in danger. Dear friend, you may rejoice in the thought that our good brother died in the effort to save the life of a fellow-man.] A. I. R.

A PLAN FOR CONVERTING DARK HONEY INTO WHITE; NOT BY THE GLUCOSE METHOD, BUT SUBSTITUTION.

Many a bee-keeper in this vicinity found last fall a considerable part of his surplus to be buckwheat and other dark honey; and, on attempting to sell it, found but a limited market at a very low price.

If I could set forth a scheme by which such an unsalable article could be instantly converted into nice white honey I suppose they and others similarly situated would be made much happier. While I know of no magic by which dark honey may be *transmuted* to white; yet I think there is a plan by which it may be *exchanged* for white at the cost only of time and a little labor. It is better not to try to market such honey, nor even to take it from the cases in which it was made.

My plan is, to place the cases in the spring *under* the brood-chamber of the hives, before the time for putting on surplus cases arrives, calculating the matter so that all space in the body of the hive will be filled by the honey which the bees will carry up except what is needed for brood-rearing. This will force early swarming and the storing of all white honey in sections when surplus cases are added, on the advent of the white-honey season. At the close of the clover and basswood season, take off all cases, remove merchantable honey, and return the rest to the cases, putting the best and most nearly completed by itself; then return to the hives, selecting energetic swarms having combs occupied either with honey or *young* brood. Place a heavy case on the top, and its complement under the brood-nest; and in a very short time the upper one will be filled from the lower, and completed. This plan gives you white honey without admixture of dark. When there is such a mixture the dark sells the light, not the light the dark.

For the after-crop of honey, second-hand boxes may be used; but it is false economy to put on old boxes for clover and basswood. In the same way, empty combs are a detriment to the fancy part of your crop, but an advantage to the lower-grade portion.

Flint, Mich. EMILY E. WEST.

[We believe this plan has before been proposed, and has to some extent been put into practice. At first we thought you were going to propose to lighten the honey by glucose; but your plan is far better, and, what is of far greater importance, is perfectly unobjectionable from a moral point of view.]

QUEENS FROM THE SOUTH VS. THOSE FROM THE NORTH.

Has any one experimented to see whether the progeny of queens raised in the South, and sent north, are as hardy as from queens raised in a cold climate? If queens raised in the South are as good for the North as those raised up here, Southern breeders have a great advantage over Northern queen-breeders.

HOW MANY COLONIES WILL 2000 BASSWOODS SUPPORT?

How many colonies of bees could profitably be kept to pasture on 2000 young basswood-trees, averaging 6 in. through, and 2000 that would average 3 inches? The trees are 15 or 20 years old.

I am much interested in the adulteration discussion, and I consider honey sugar or sugar honey a dangerous thing. I hope it can be detected readily, and prosecuted to the finish.

Cherokee, Ia., Feb. 15. L. J. FAIRFIELD.

[So far as we have been able to observe, queens from the South are just as good as those raised in the North. With regard to the basswood, your question is a hard one to answer. In good seasons, the 2000 trees might yield all that 500 colonies could gather for ten days. Indeed, they might do much more, and perhaps much less. Basswood is a wonderful honey-plant, but we have no accurate data.]

BEES AND FRUIT; SOME SENSIBLE WORDS.

The question of bees and fruit-trees again commands the attention of horticulturists and apiarists. In some sections where bees are

numerous the fruit-growers are troubled at this season while packing fruits, and naturally condemn the bees without stopping to reflect upon the advantages to be derived from them in fertilizing the trees and vines from which the fruit is taken.

In England a fruit-grower was surprised to find that, in one corner of his garden, in which were placed colonies of bees, the trees were heavily laden with fruit, while those more remo e had set very sparingly. Then he called to mind the circumstance of its being very dark and foggy during the blooming of the trees, so that the bees flew but a short distance from their hives.

The proprietor of a cherry orchard in California found that his trees did not bear remunerative crops after the fiat of the raisin-growers banishing the bees to a distant canyon. Being convinced of the necessity of bees to fertilize the bloom, he procured some colonies, located them in his orchard, and then realized satisfactory returns. Horticulturists and apiarists are like the American Union—one and inseparable.—*Irrigation Age.*

BEE-HUNTING.

I am still climbing bee-trees. I went down into the sunk lands this fall and climbed two trees. I got 50 gallons of honey. I had a picture taken of one tree 8 feet through and 90 feet high. If you wi-h one to put in your journal I will send you one. I am going into the bee business. I have 13 stands. I had only one stand last summer, and I sold from it $19.50 worth of honey at 15 cts. per pound.

GREEN DERRINGTON.

Poplar Bluff, Mo., Jan. 5.

[Send us the picture, friend D., and, if suitable for a half-tone, we shall be glad to use it. If you can get $19.50 from each stand in a whole apiary, you will soon be a "big bee-man."]

HOW TO STOP BEES FROM EATING THROUGH OILCLOTH.

A friend recently showed me a way by which he prevented propolis being fastened to the oilcloth cover of his hives. Like many of us he was troubled by the bees eating through it. He makes a light frame of wood, about a quarter of an inch thick and an inch wide, the size of the hive, and nails it across, keeping it from sagging by putting a doubled strip of tin across the center. This cover laid over allows a bee-space between it and the tops of the frames. This may not be new, but it is efficacious with him. He also prevents the combs being joined together by making the frame 1⅜ inches wide, allowing a space between when placed in the hive.

R. B. HUGENAN.

Boerne, Tex.

HOW TO KEEP BEES AWAY FROM WATERING-TROUGHS, ETC.

I grease the tops of my watering-troughs with any kind of old grease with a little kerosene mixed with it, and have not a bit of trouble with bees in them.

There is a colony of bees located in the chimney of an empty house right here in Carpenter. The combs have become very much blackened from the rains washing the soot down among them, but the bees are still working away. They cast one swarm which hung on the branch of a tree near the house for two days, right in the sun too. No one in Carpenter had the courage to hive them, as they were rather high up. At last some one sent me word, but I was not told of it until they had gone.

Carpenter, Ill. EDW. SMITH.

AN EXCELLENT PLAN FOR GETTING RID OF LAYING WORKERS.

To get rid of laying workers, take the colony infested and set it on a wheelbarrow; then put a clean hive on the stand just vacated, with a frame of good brood, and a queen-cell if you have it. You are now ready for all the field-bees that are out. Wheel the hive that has the laying workers, twenty or more rods from the apiary, and shake the whole outfit of bees off on the ground, and let them find their own way back to their old stand. You can put the combs back, or you can distribute them among other colonies, and give the colony on the old stand frames of empty comb, or foundation, just as you may wish. We never failed to get rid of laying workers by this plan, and we have had considerable experience, especially with laying workers among Cyprian bees, and we very much doubt whether there are any worse bees in that respect than the Cyprians; and if there is a more vindictive bee than the Cyprian, we really should like to see it.

Rochester, O. M. W. SHEPHERD.

A CHEAP WAY OF COOKING WHEAT FOR FOOD, ETC.

God gave us wheat, but we do not use it as he gave it to us. We first take part away. Take the runners off your sleigh, and how will it work?

Milk is the best of food; but the injunction, not to wash our solid food down with it, can not be put too strong. Also, it is said we should not drink it fast. A nice way to prepare wheat for food is to obtain it perfectly free from foul seed and other matter. Take the whole wheat, wash it, soak it five or ten hours, then boil it in a tin basin over the augite mat. Any dish may do to boil it in; but you want the mat, as it is a bad job without one, for the wheat must be boiled half a day. Eat it hot or cold, in milk, with cream, or with butter, or alone. I prefer to have most of the water cooked out when done.

B. D.

Eagle Point, Wis.

EMPLOYING HELP, ETC.

When I read of your views and trials with hired help, I am painfully conscious that many men who have land enough to keep half a dozen men at work the year round think it the safest to do what they can with their own hands, and let the rest go. The important thing for all of us is, to endeavor to learn what "temperance in all things" means, in all its phases and in all its fullness, and then strive to live up to it.

W. H. J. DREW.

Chateaugay Lake, N. Y., Oct. 25.

COLDEST WINTER IN YEARS; SEVERE LOSSES.

We have had the coldest winter here that we have had for years; and the result as to bees is fearful. Fully fifty per cent of them have frozen and died. Those who tried to winter on summer stands without any packing have lost nearly all. I commenced the winter with 30 colonies on summer stands, but packed as directed in the A B C, and have lost none.

Sneedville, Tenn., Jan. 28. H. F. COLEMAN.

FROM ONE COLONY TO 6000 IN 13 YEARS.

If it interests you and the readers of GLEANINGS I will state that, in 1870, a gentleman brought a few colonies of bees (the first) to Tahiti, Society Islands, in the Pacific (French colony), and in 1883, when I left the island, they had increased to six thousand colonies.

Pully, Switzerland. I. P. GRENO.

A PLAN FOR KEEPING DOWN INCREASE.

Editor Gleanings:—Not desiring further increase, I wish to ask you and the readers of GLEANINGS what you and they think of the following plan to keep down or prevent increase: My hives are all two stories. About the time the bees start queen-cells in the spring, take the upper story (with an extra cheap top and bottom); place it at the side of the hive, and in this place the old queen, with about one-third of bees and brood. Give the two sufficient combs; then when the new queen commences to lay, destroy the old queen and unite the two. You will confer a favor by pointing out any objection to the above plan, and I should be pleased to hear from many of your advanced bee-keepers on the subject. E. P. CRANSTON.

Keating, Oregon, Jan. 25.

[We think the plan would discourage increase, if not prevent it, in most cases, altogether; but when bees once get the swarming mania it seems as if nothing would stop them. In such cases, let them swarm; hive them in a hive on frames of foundation, and put this hive and all on top of the parent colony, with a bottom-board between, so that there is no communication between. After the honey season, remove the dividing bottom and let them unite. We did this one season, and it worked very well. Of course, in the parent colony we cut out all the queen-cells but one before the swarm with its hive was placed on top.]

NO BURR-COMBS ON THE NEW HOFFMAN FRAMES.

I see you wanted to know our experience in regard to brace and burr combs on the new Hoffman frames. With me they are complete. I do not think there is one on the 250 bought of you last spring. I used full sheets of medium foundation. The Dovetailed chaff hive is nearly perfect. I have had a hard winter, but the two colonies out of doors are alive yet in them, and 35° below zero. W. E. L. MILLS.

Lac-qui-Parle, Minn., Feb. 15.

SCARLET (OR ITALIAN) CLOVER.

ITS VALUE AS A HONEY-PLANT AND AS A CLOVER TO BE PLOWED UNDER.

Mr. Root:—I inclose a circular from the Western Seed Co. The country is being flooded with them, and some of our farmers are investing. Please give your opinion. Our altitude is 2300 feet; and I tell those who ask my opinion, to invest on a very small scale, as it will hardly be a success here. J. L. MCKENZIE.

Howesville, W. Va., Jan. 13.

We give below the contents of the circular referred to:

Scarlet clover is an annual, and should be sown between July 15 and October 1. It germinates quickly, grows very rapidly through the fall and winter (where the winter is not too severe), making excellent winter pasture. It blossoms between the middle of April and the middle of May (according to latitude), and matures seed in June. This clover can be sown after crops have been removed from the ground, such as wheat, oats, millet, beans, potatoes, or, in fact, on any vacant ground, or can be sown in corn at last working, or later by first stirring the ground. In this way it will prove of inestimable worth in holding the valuable nitrates in the soil that are otherwise washed out of bare ground, while at the same time it furnishes the very best of fall, winter, and spring pasture, and enriches and stores up plant-food for the next crop.

Scarlet clover grows from 1½ to 2 feet high, with magnificent root formation, extending from four to six feet deep, even in unfavorable soil. It can be turned under as a fertilizer for any crop early in the spring, or will produce eight tons of green fodder on good ground by the middle of May, or from two to three tons of superior hay. The yield of seed is from eight to fifteen bushels per acre, weighing 60 pounds to the bushel. It flourishes on poor soils and furnishes for them more plant-food in a short time than could be secured in any other way.

Scarlet clover can not grow with wheat or rye, as it grows while they remain dormant, and takes the ground. It can be sown with timothy. It may be sown in the spring, but the result is a shorter growth and late bloom, but makes a most desirable bee-pasture.

Being a supplementary and extra, or "stolen crop," no other crop need be omitted to grow it; also, it grows quicker and adds more fertility to the soil than does any other known plant in so short a time. We believe its spread through the country will add materially to the prosperity of the agricultural classes. The price of seed is as follows: Per bushel, $10.00, f. o. b.; per half-bushel, $5.20, f. o. b. For all quantities less than half a bushel, 20 cents per pound. THE WESTERN SEED CO.,
South Bend, Ind.

[The above plant has been for years in our seed catalogues, among the list of honey-producing plants; and we have grown it, to a small extent, for several seasons. I have noticed of late, through the agricultural papers—especially the *Country Gentleman*—that a good deal is said about using it in place of other clovers. It certainly is a great advantage if it can be put in in the latter part of July or fore part of August. I very much doubt whether it will take root so as to stand the winter, if put in during the latter part of August. Perhaps in favored localities it would do to put it out in September. It certainly is a rank grower. A little bed of it in our rich market-garden grounds attracted the attention of farmers as they passed by; and quite a number asked why it would not be a splendid clover to turn under. I have never tested it in this way. All our sowings have been in May and June. I have never paid enough attention to know whether it winters over with us or not. If it does in South Bend, Ind., it certainly does here. I do not think I ever saw any as much as two feet high; and the statement that it will produce eight tons of green fodder per acre, it seems to me, must be an exaggeration. Perhaps on the very richest ground, during the most favorable seasons, it might come pretty near it. My experience is, that it will not flourish on poor hard clay ground, any thing like sweet clover. I can not tell how much seed should be sown to the acre. Perhaps some of our readers can give us a little information. It has been advertised quite extensively in the *Country Gentleman*, and in other papers, at $6.00 a bushel. We can furnish any quantity of clean tested seed at the above figures; and for large lots we could make the price, at present writing, $5.50, or even $5.00. Friend M. is very right in advising farmers and everybody else to test a small patch of it first, before going into it largely. Besides, these people who are tempted to invest in new things of this sort should look over their catalogues, or go to their seed merchant to look it up and give them the proper price. While we can not pronounce the circular a humbug or a swindle, it certainly is a scheme to get more than the market value for a farm product that is comparatively well known.

With the present interest that has been called forth within the last year or two, it is destined to be pretty thoroughly tested. It is such a great beauty that it ought to be given a place around our homes as an ornamental plant, if for nothing more. When in full bloom it looks more like a wonderful crop of strawberries than almost any thing else, the color of the clover-heads being much like that of a beautiful ripe

strawberry. Here is something further in regard to it:]

CRIMSON CLOVER AS A HONEY-PLANT; QUALITY OF THE HONEY, ETC.

A correspondent in last GLEANINGS, Feb. 1, has asked about the crimson clover, *Trifolium incarnatum*, as a honey-producing plant. It has been grown at Biltmore the past few years as a forage crop, with excellent results. The seed is generally sown in our locality in early autumn, in time for the plants to attain a fair foothold upon the soil. It is one of the earliest plants to start into growth in the spring, and in early June the field is a glowing sea of crimson flowers. During the time that we have grown this valuable clover it has never failed to be a source of nectar; and the bees (both the honey-bees and their cousins the bumble-bees) may be seen upon the same plant, and are kept busy during the entire season of bloom. In the apiary, which is a small one, we got from every strong colony one Dovetailed super filled with the choicest honey from this source.

Crimson clover blossoms before white clover, when sown in the fall; and, with us, has proved to be an excellent honey-plant and a good forage crop. I do not know that crimson clover could be grown in the North by sowing the seed in the fall, nor do I know its value as a honey-producing plant when sown in the spring. I should not hesitate to try it grown on either plan. The quality of the honey gathered from crimson clover is of the finest—almost colorless, and of exquisite flavor and aroma. In my estimation it is not surpassed by the famous honey gathered from the sourwood (*Oxydendrum arboreum*), which, in the mountains of the Carolinas, is considered par excellence.

Biltmore, N. C., Feb. 11. C. D. BEADLE.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

MORE ABOUT THE POTATO ONION.

Mr. Root:—Thinking that my experience in cultivating the English potato onion might be of interest to you or the readers of GLEANINGS, I give it below. These onions increase by small ones about the plant-bulbs. The bulb must be one year old before it will produce any bulbs around it. I separate my bulbs just as soon as the tops die in the summer, and place them in a cool dry place until late in the fall, leaving the tops on them. While the ground is yet dry and warm, mostly in the latter part of October, I prepare my plot of ground by deep plowing and thorough harrowing and raking, laying it off in rows 15 in. wide and 3 in. deep. Be certain to make your rows straight, or you will cut the onions when you use your hoe. Plant the new bulbs, *i. e.*, the ones grown in the summer just past, in these rows every three or four inches, pressing them well in the bottom of the row. Cover well by making the row a little full on top, and thoroughly pack the earth by passing a heavy garden-roller over them.

Before freezing weather, give them a coating of either well-rotted manure, and over this a layer of straw, or else cover with stable manure which has considerable straw in it. I prefer the well-rotted manure, and straw over it. This covering is to protect the onions during the winter, and to furnish food for plant-growth in the spring. In this way you will have choice onions for the table before other people have planted theirs in the spring. About the time most persons make their garden, or a little later, go along and remove all the straw, and carefully cultivate between the rows of onions with a garden-fork or some instrument of that kind. After this, cultivate as you do other onions. If you have good loose ground, well drained, and lying to the sun, you will see onions at the end of the season that will make you proud.

If you wish your onions to be very nice, pull them just as soon as the tops are dry, or well withered up, and lay them thin on boards in the shade, and keep cool.

Now for the onions that produce the increase. Prepare your ground thoroughly by deep cultivating just as early in the spring as you possibly can. Lay off in rows 18 in. apart and 2 in. deep. Plant the year-old bulbs 6 or 8 inches apart in the rows; cover lightly, and settle all with the garden-roller. Cultivate frequently, but not too close to the bulb, or you will destroy the young bulbs that are forming. Gather as before described in case of the onions to be eaten. I have tried planting old and new bulbs, both fall and spring, and can say that I can get the best results when planted as above described.

To give you an idea how productive they are, I will tell you that, on a plot of less than 30 ft. square, I raised over 10 bushels last year. I was raised in a market-garden, and had considerable experience with the potato onion.

O. S. BROWN, M. D.

Londonderry, O., Feb. 22.

THE EGYPTIAN, OR WINTER ONIONS.

Friend Root:—Our sales were more than double this year than ever before, consequently we are out, but have about four acres planted for next year. We never saw them look so fine at this season of the year.

I notice in your number for Sept. 1st, that you recommend planting onions four to six inches deep. If to be done with a sharp stick, I think this is a mistake; but on your rich loose land it may be different. My idea is to plant them deep, as you say, but put little covering on; but after they get well started, work up the dirt to them. They will grow much faster, and be more sure of a good stand when they are covered so deep. It takes them so long to get through, and they do not seem as strong.

Rio Vista, Va. M. T. THOMPSON.

POTATO ONIONS; IMPORTANCE OF PUTTING THEM IN EARLY; NEW VEGETABLES WORTHY OF NOTE.

I wish to emphasize one point in their cultivation, which is of the greatest importance; i. e., *setting them out early*. They should be set just as soon as the ground is thawed. Don't wait for it to dry. A few years ago I became deeply interested in this variety of onions, and purchased 20 bushels of large ones at harvesting time, to set the next spring. After looking up every authority on the subject I thought I knew how to grow them; but they gave me little more than my seed back, and I have learned since that the trouble was they were set out too late. For bunching they are just the thing to follow the Egyptians, and I have failed to find any onions as good for the purpose at that season. I have never tried the White Multipliers, but shall do so this season. I have been in the habit of testing most of the promising novelties in vegetables, and I find once in a while one of merit. Last season I was very much surprised to find a sweet corn five days earlier than the Cory, and in every way just as good. The seed came from Burpee, as "Burpee's First of All." I also found Burlington Hybrid very late, and, I think, almost worthless for gardening.

In early beets for bunching, I find the "Elec-

tric," offered by Tillinghast, to be just a little earlier than Eclipse or Egyptian, and considerably better in shape, and superior for outdoor culture. It makes better beets for marketing in the winter. I have grown this variety in a small way beside the Eclipse, Egyptian, and Lentz, for three years, and shall grow it exclusively this season. Last year I had one-eighth of an acre of the Electric.

Oneida, N. Y. EDWARD B. BEEBE.

[Thanks for the point you give us, friend B. We tested the Electric beet, but unfortunately did not put any Eclipse or other kind out at the same time so as to tell which was best. We shall this season give the corn and the beets a trial with other varieties.]

A PLACE FOR SIFTED COAL ASHES.

Here is an item which may be of use to your "high-pressure gardeners" who have a heavy or sticky soil when wet. Early in the season, after the ground is made ready for small seeds, there will frequently be a wet spell, when it may be possible to *open* a drill, but almost impossible to cover the seeds after they are in; or after seeds have been put in, heavy rains may compact the soil so they can hardly get through it. I have found the following plan will overcome this difficulty: Open the drill and cover the seeds with sifted coal ashes; firm well, and the seeds will come up nicely; then, too, the ashes clearly mark the location of the drill, making cultivation easier. I have tried this for three years with beets, cabbage, lettuce, radish, and other small seeds. I think insects dislike ashes. JOSEPH F. BARTON.

Chicago, Ill., Feb. 6.

[Many thanks for your suggestion, friend B. To tell the truth, I have just been using sifted coal ashes for covering onion seed in the greenhouse. They do not bake or crust over as do our clay soils, and the onions seem to have a peculiar bright look as they come up through the ashes. Perhaps I should explain, that the ashes I am using is a material that drops down at the back end of the flues of our boilers. We have several wagonloads of it in the course of the year. It is about as fine as wood ashes, but considerably heavier. As we burn all our sawdust and shavings, there may be some wood ashes among the coal ashes; but the amount is so small that, when I put them in my mouth, I can not detect any potash by the taste. It seems like so much sand. And, by the way, we have for some time been covering the seeds in our plant-beds with sifted sand, and it makes the beds look nice, and the seeds have no crust to break in coming up. I think sifted coal ashes will be an improvement; and I am pretty sure, too, that it will improve hard clay soils. For sowing seeds in the greenhouse and coldframes, it is almost as easy to cover them with sifted ashes as with soil; and then if you pat down the surface of the bed with a board after the sowing is done, it gives your work a workmanlike appearance; and our small boys seem to get the weeds out easier where they have a level surface with a white background, so they can see the weeds easier. Another thing, the weeds seem to come up more readily out of either sand or ashes than out of hard clay soil; and when you come to water the plants, there is no baking on the surface. We can not afford to have a crust forming on the surface of the plant-beds after the heavy waterings we give the beds when they get dry.]

BERRY-BOXES AND SCANT MEASURE.

What is the right size of box to use for berries—wine or dry measure? The wine measure is used here entirely, and folks all the time grumble because they don't get a full quart; so I went to using the dry measure, and you can't make them believe they are getting a good measure. They say, "Your box is a little larger around, but the bottom is up higher." Now, what would you do? I am willing to do the right thing; but I do not like to have people say I am cheating them. One man said to me, "You are selling a pint of berries for a quart." I said, "No," and bet him $5.00 I was giving full measure, and had the box measured right on the street, and it was all right. Then he tried to crawl out of it. I did not want his money, and would not have taken it if he had offered it to me. I have about made up my mind to buy the wine measure, and let people have something to grumble about.

Brodhead, Wis. P. H. FELLOWS.

[Friend B., I would purchase such boxes as are most commonly used. Of course, however, I should prefer boxes that hold a full pint or a full quart, if this can be definitely settled. Then I would tell my customers that the price is so much a boxful, and I would give good rounding measure every time. Sometimes the boys say we must come down on the price of our berries, to meet competition. But I tell them, "No, don't come down on the price—at least, not just now; but give heaping measure." I suppose you know we sell our strawberries and raspberries in pint boxes. Sometimes when customers tell how low others sell, we say, "Well, others must do as they think right and proper. What we do is to give you a box like this, so full, for 8 cts." The above would be when we were getting 15 cts. a quart—8 cts. a box, or two boxes for 15 cts. These remarks refer, of course, to retailing from the wagon. When it comes to wholesaling, it would be very desirable indeed that all purchasers use one kind of box. If they do not do it, however, I would try to make up in quality and good full measure, so that my product would bring as much, or, better still, more, than that which is sold by those who are not conscientious.]

THAT EVERBEARING RASPBERRY.

After my mention on p. 781, 1892, the following letter came to hand in due time, but we have only just now found a place for it:

Bro. Root:—I am the one who sent you the "Everyday" raspberry—that is, if you have 20 or more bushes. One bush won't ripen berries *every* day. I don't know the name of this berry, but I suppose it is of the Earhart type. It has been growing here for 30 years. I procured two plants five years ago, and now have about 4000 plants. I could spare 1000 or more, as I am unable to work, having had rheumatism for a long time. I could sell them for 15 cts. each, or four for 50 cts.; $1.25 per dozen. I see Dr. Miller dosen't like this kind of berry. I suppose he did not know how to handle them. If you pinch them back you lose your fruit, as the new wood is the bearing wood. I have had as high as 500 berries on one cane. M. L. HOBBS.

Middleport, Meigs Co., O., Nov. 12.

[We do not usually permit advertisements in the reading-pages; but I feel so sure that a raspberry-plant like my own will give satisfaction I have decided to let the above go in. In one of our seed catalogues we find the following in regard to the Earhart raspberry:

An everbearer, introduced by Hale Bros., of Connecticut. It is a good grower, and produces fruit from June till October; and when a market can be had at a high figure, it will pay. It is also valuable for the home garden, as it gives fruit throughout the fall.

Very likely the seed catalogues give the most favorable side of the question. Perhaps I should add, that mine are on some of our very richest and best market-garden ground; and the result is, that all through the fall we had more or less great beautiful berries, and it seems to me they were more luscious than any other raspberries I ever ate before. One reason for this is the very rich soil, before mentioned; and another is, I took them right from the bushes.

BUSH LIMAS, ETC.

I have just received $118.00 for Henderson bush lima beans—part of the outcome of one quart of seeds bought of you in the spring of 1891. I have a bushel of seed left for my own planting. Your Mammoth sweet corn gave tiptop satisfaction last summer in our market. In this market almost all kinds of sweet corn are shown side by side, and I had the pleasure of the most praise on the Mammoth, I believe. White Plume celery is hard to "butt against." I sold $43.00 worth in ten minutes the other day.

Sidney, O., Feb. 21. P. O. THOMPSON.

[Friend T., this illustrates what may be done with the novelties when we are so fortunate as to get hold of one that is really valuable. You may remember that I felt so well satisfied when the bush lima bean first came out that I invested pretty heavily. The first season I sold quite a good many of the dry beans for $20.00 a bushel. They have only just now got down to about the price of pole limas; and my impression is, that they can be raised almost as cheaply as common field beans. One trouble is, they keep ripening through so long a period, that, if not gathered, the pods will burst open and let the dry beans fall on to the ground. To remedy this, we have small boys go over the patch and pick all that are ripe enough for seed, at intervals, until just before frost; then we pull them, dry them in the field, or in a loft, and thrash them like common beans. While I got my money back, and made a very good thing on the investment on the Henderson bush lima, I lost heavily on the Kumerle; but I think now, that, if I had held on to it until we had had a moderately dry season, especially after I knew a little more about putting them on dry ground, well ridged up, I think I might have done well on them also. You see by the seed catalogues that they are just now coming to the front again.]

WELL WATER FOR IRRIGATION; POTATO ONIONS, ETC.

Friend Root:—I never got hold of a paper I liked so well as I do GLEANINGS; it seems to be condensed. There is nothing in it just to fill up; it is all good, from cover to cover.

Is well water unfit for watering a garden, strawberries, or plants? Is there any thing about the water that is injurious to vegetables, any more than it would be from a creek or river? I am about digging a well, putting up a windmill and supply tank, mostly for the purpose of watering strawberries. I lost at least $300 worth of strawberries last year on account of dry weather; but there was a man here the other day who told me that water from a well would kill my plants. He said he learned that while working in a garden in Chicago. I paid a man $3.00 per bushel for my start with potato onions. Your correspondent describes them exactly, but I set them out in the fall, just before the ground freezes, long enough for them to get rooted well, and then cover them up well with coarse manure or straw, or any thing that will keep them from freezing and thawing; then they are the earliest onion known.

Tekamah, Neb., Feb. 2. J. S. ROBINSON.

[If I could have my choice, I think I would a little rather have soft water for irrigation; but well water is used for that purpose all over the world; and it is very rare to find water so hard, in the alkali desert regions of the West, as to make it unfit for irrigation. I have known of salt water from the ocean being used successfully for many kinds of plants. The water from our windmill is very hard indeed; but I have never known any objection to it, except that, when it evaporates, it sometimes leaves a whitish powder or residue. Sometimes this spots the foliage a little, and may possibly be a slight hindrance until we have rain to wash it off; but I am not sure of even this. I have sometimes wondered if the chemicals contained in hard water might not, in some cases, be beneficial to plants. We know that, nowadays, they are using a great variety of chemicals for fertilizers. I think I have heard that, in the desert regions, water very strongly impregnated with alkali, in time, proves to be an injury to the soil; but the well water you are likely to get in your locality feel sure, would not be detrimental.]

OUR HOMES.

He that followeth me shall not walk in darkness, but shall have the light of life.—JOHN 8:12.

The above beautiful text I found in a new book that has been taking a strong hold upon me of late. The book is entitled, "In Health." But instead of considering this matter of sickness and disease from the standpoint I have been considering it, Dr. Ingersoll considers the spiritual and mental conditions necessary for health. He takes the ground that a great part of the diseases that afflict men and women are caused by rebellion against God's laws. As an illustration: The Authorized Version of the New Testament reads, "Whosoever is angry with his brother, without a cause, shall be in danger of the judgment." The New Version, you will notice, leaves out the clause, "without a cause," entirely. As it reads, Jesus made a simple positive statement as follows: "Whosoever is angry with his brother shall be in danger of the judgment." Now, it is not our province to discuss here which is right—the new or the old. I do not believe it will hurt us if we accept the New Version; and this book teaches that a great part of our indigestion, with paralysis, loss of strength, and a thousand other resulting evils, comes from giving way to fits of anger, or, more often, because of cherishing a rebellious spirit when we are *not* angry. People rebel against their lot in life. How many of the readers of GLEANINGS are secretly rebelling against the place which God has seen fit to give them in this world? Well, my friend, it is cherishing and allowing this rebellious spirit to grow, that is the cause of your aches and pains and general distress of body. If you say, when this old doctor and your friend A. I. Root tell you this, that you do not care if it *is* injuring your health, you are not going to submit, etc., then you are in *great* danger. Of course, I do not mean that *we two* are infallible, nor do I mean that it is one's duty to submit meekly to every indignity; but I mean this: That, when we get into a rebellious spirit toward the existing state of things, Satan is so sure to creep in and suggest sinful thoughts, that the chances are very great that we had better submit rather than to get into a frame of mind that unfits us for fighting existing evils. What shall we do? Why, you know already what *I* would advise; and Dr. Ingersoll most emphatically

advises this very thing: Take your trouble, your care, and your burdens, whatever they may be, to Him who said, "Come unto me, all ye that labor, and are heavy laden, and I will give you rest."

This book, "In Health," quotes Scripture, and quotes it with such a direct practical bearing, that it almost startles me. When I found the text at the head of this talk, quoted in one of those direct and practical illustrations, it seemed to me that I had never found it before, and I love to read it over and over—"He that followeth me shall not walk in darkness;" my friend, how often have you felt that you were walking in darkness?—"but shall have the light of life." What is the light of life? The Savior used the word "life" in a grander and loftier meaning than it had ever been used before or has been since. He meant by it, spiritual life—a life that brings us near to God, and tells us of God and of his plans and purposes.

Perhaps I should say, before going further, that this book, "In Health," is mainly to married people. It is a wonderful exhortation to conform to God's laws, and to believe that God made no mistake. It is a book that, very likely, you would not care to leave on your center-table; and yet I begin to have a conception of a good time coming when such books may be safely given to the children. I would a thousand times rather have my children taught by a gray-haired patriarch like Dr. Ingersoll, than that they be taught by the poisoned and impure minds that every now and then are found even in our public schools.

One of the singular things in this book, and one that will doubtless offend many people, especially if they do not have patience to read the book carefully and thoroughly, is, that the author, in teaching social purity, says these natural feelings that come to us as we approach maturity should not be *stamped* out and *killed* out. They should be allowed to grow and develop, but in a *sanctified* way. They should be recognized as a part of our being, sent from God, to be consecrated and used like other gifts. I think some of the teachings of the book are possibly a little dangerous, because, perhaps, they may be misunderstood; but yet I do believe there is great truth in them. We are in the habit of calling certain things low and animal. We do this because we see them allowed to go unrestrained, in a low and animal direction. When consecrated to Christ Jesus, and guided by an earnest, honest, loyal devotion to God, they are *God-given;* in fact, they are one of the things that go to make up a man. Now, suppose this man, with mistaken notions, tries to stamp them out; suppose he makes it a subject of prayer, that God may stifle and kill this part of his manhood. Many a man has done this; and in some cases it seems as if God had granted that prayer. The man is a man no more, in the sense that God intended him to be one and *wanted* him to be. He is crippled in one of the greatest essentials of manhood. He has lost, in a sense, one of the strongest, most enduring sources of energy that courses through the veins of manhood from one generation to another. In other words, we may have been ascribing to *Satan* certain things that came from God. The business of a real true man is to guide and direct this force within him, that sometimes seems like the pent-up steam, that shrieks as it rushes forth, while it draws the heavy laden train of cars behind it. When I use the term "man" I use it in the broad sense that includes woman also; for she has a part, to be sure, in every thing that concerns manhood. It is the woman's mission to fill the sacred office of motherhood to the world; but while she discharges this office in a way that is pleasing in the sight of her Maker, she can also, we are beginning to learn, fill most gloriously many other offices. The world is just now beginning to discover that not only are the mothers to train the children while they are small, but they are to look after their training while in the schools. Whenever I hear of a mother being a member of a school-board, I inwardly say, "May God be praised!"

Well, I hardly need tell you that women suffer more from a certain class of diseases than men do. Why is it? This book suggests that, in a certain sense, they are more *rebellious* against God's laws than men are. They rebel against discharging the duties of this very same motherhood. There are more women in this land, perhaps, than you are aware of who declare they are not going to be mothers; they are not going to sacrifice their lives, nor wear themselves out for *anybody*, born or unborn. They are going to have an easy time of it. Perhaps they do not say outright, "No matter what the Bible teaches, and no matter what nature teaches," but they are rebellious, and they insist on having their own way. Sometimes they get so determined to have their own way in this matter that they break not only one but perhaps half a dozen of the commands of the decalogue.

Please excuse me, dear friends, if the above seems hard and severe. I know it does not belong to all of you. Permit me to make an extract from the book I have mentioned:

> Faith in Christ is the all-sufficient remedy for the sins of men and nations. If mankind would receive the power of Christ for the regeneration of sexual life, the sacredness of marriage would never be profaned by the terrible sin of interference with the Almighty in the birth of immortal souls. No person ruled by God could ever have such a thought or purpose. While in the depths of the heart it is acknowledged to be a great sin by those who commit it, still they invariably seek to justify their murderous designs and deeds by the counsel of physicians or friends. The darkness in which they live can never be dispelled by the wisdom of man,—only by Christ, through the redemption of sexual life.
>
> "Marvel not that I said unto thee, Ye must be born again."

Does this office of motherhood wear women out, bring them to premature graves, or send them to the insane-asylum? Oh, no! no! Statistics, if they could be had, would show it just the other way. The mothers of our nation are healthier than those who *refuse* to be mothers. In fact, right among your own circle of friends and acquaintances you can find plenty of cases where stubborn diseases that our doctors and sanitariums could not cure have all disappeared when the patient became a *mother*. When she had a rollicking boy of her own to love and train and teach, and absorb the best and noblest instincts of her motherly soul, then she *forgot* to be sick; and when this boy grows up and starts off to school with a mother's love in his heart, and a mother's kiss on his cheek, just see that *woman* grow! See not only how her physical frame, but her intellect, broadens and expands! Heretofore a selfish, frivolous girl, she begins to be interested in the affairs of nations; for this boy—her *very own* boy—is soon to go forth, possibly out among the nations; and *through him*, and the possibilities that lie before him, she begins to study geography, commerce, manufactures, and possibly politics and law, for she is an *interested* party. The welfare —no! no!—not welfare, but the safety and perpetuity of our nation depend upon the mothers; and yet how many there are, who, through narrow and mistaken ideas, refuse to *be* mothers!

I can imagine right here, that a great con-

course of mothers are saying to me, "Mr. Root, *you* are a man. You have an easy time of it compared to what we are and have been called upon to endure. *You* do not know what you are talking about. You and Dr. Ingersoll are not competent judges." I admit this, dear friends: but may I suggest that it was God *himself* who saw fit to make *you* a woman? It was the great God himself who saw fit to lay the sacred responsibility and burden *upon* you; and we have God's promise that his grace is sufficient for us. The testimony of the book I have been speaking of, and the testimony of our best physicians, including *female* physicians, is, that your pains and your cares will be *less* if you accept the office God has called you to fill. One reason why these burdens are so great is because of this very thing of rebelling against it. Rebellion against God's laws, or rebellion against even the laws of the land, makes life's duties ten times harder; and it is, perhaps, truer in this matter before us than in any thing else. The Bible tells us that "God loveth a cheerful giver." The woman who says in her heart, "Lord, here am I, ready to do thy will; teach me thy ways," shall *not* have a *very* hard time of it. Dear mothers, please remember that, though I am not one of you, still I am most intimately acquainted with one who has borne all your sorrows. The very best friend I have in *all this wide world* is a *mother*, and I have been very close by her side while she has passed through all these things of which I have been speaking; so in one sense I do know at least *something* about whereof I speak. In the Old Testament there is a very beautiful expression which occurs many times, which I have often thought of. It is this: "Thy handmaid;" or, "Behold the handmaid of the Lord." What a wonderful thought! and, oh what a difference it makes in life, if you take up these God-given burdens with cheerfulness, and with hope and faith! If both husband and wife can start out with the duties of each day before them with a cheerful, bright faith and hopefulness, how easy these things that God has laid on us are to bear! Let the husband, as soon as he opens his eyes in the morning, say, "For *her* sake I am going to labor;" and let the wife also say, "For *his* sake I will do this, that, and the other." Let each one put the *other* before *self* and next to *God*, and, oh what a reform the world would soon see! When children come into such a home — that is, when *God* sends them as precious gifts to such a father and mother, what bright, joyous, and devoted children they will be! The little copartnership that started out with man and wife soon enlarges into a small community; and the example of the parents' unselfish devotion to each other will, you may be sure, be copied by the children. You will hear each member of the family speaking of *our* home. They may not say right out in *words*, "But a'n't we proud of it?" but they will say so in actions; and when you look in upon that home, what a little paradise here on earth it seems! It will not be one of your tame, listless homes—no, not a bit of it. There will be energy and vim, and boisterous spirits, restrained only by the gentleness of a mother's love. The boys, and girls too, from such a home can be sent safely anywhere. They go off to school, or travel on the cars, or transact business beyond their years, if need be. And divorces—why, the thing is preposterous. Not a single inmate of that home would think of a divorce any more than they would to cut off one of their hands or feet. It is *God's* presence that makes the home; and with the text that I have chosen shining forth from that home as a motto, who can conjecture what the outcome of such a home will be, and what its effects shall be on the nation—or, may be, the *nations* of the *world?*

NOTES OF TRAVEL

FROM A. I. ROOT.

AN UNKNOWN LOCALITY.

After I had finished my travels, and looked over my Kodak views, there was one I could not locate; but inasmuch as almost all my views were taken when one or more friends were with me, I presume likely some of the far western friends will recognize the above view and tell us where it belongs. If so, will they please stand up and speak? It seems to be a common roadway leading into a tunnel in the mountains. Once I thought it might be in Pasadena; but they do not have snow in that locality. It may be possible, however, that it is a very light-colored sand in place of snow, that

A PICTURE WITHOUT A NAME: SOMETHING WHICH THE KODAK CAUGHT, BUT MEMORY FAILED TO RETAIN.

seems to cover the rocky mountain-side and banks beside the stream; but I rather think it was a glimpse of winter from somewhere. Then I thought it belonged to the vicinity of the great irrigating canal in Cache Valley, Utah, between Salt Lake City and Ogden. If so, it must have been a view taken from a moving train. I know I tried several times to get such views, but they were a failure; but the above seems to be a pretty good one. If no one recognizes it, then it will have to pass as a glimpse of some unknown locality.

GLEANINGS IN BEE CULTURE.
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.
ILLUSTRATED SEMI-MONTHLY
36 PAGES 7×10
$1.00 PER YEAR.

So God created man in his own image.—GEN. 1:27.

EIGHT extra pages as usual.

THE Tunisians, alias Punics, alias North Africans, alias Minorcans, are wintering nicely, with the exception that they appear to have lost their old queen.

WE take special pride in the amount and high character of the advertising in our pages of late. Our patrons are beginning to find that our large subscription list brings in the responses. Estimates on advertisements gladly furnished.

OUR bees have never gone so long without a cleansing flight as this winter. Our apiarist thinks their last one was during the latter part of November. In our locality the bees usually get out two or three times during winter. We anticipate no serious consequences, however.

ONE of our subscription clerks reports that new names are coming in faster than he ever knew them to do before. By the way, it is remarkable how our *old* subscribers stay with us in spite of the succession of poor bee seasons. We take just a little pride in the fact that the subject-matter of our pages speaks for itself.

THE "Condensed View of Current Bee-writings," by E. E. Hasty, in the *Review*, is quite a success. But instead of being a review it is a pleasant, spicy dissertation on ideas, things, and persons in other journals. If Hasty can "hold out" as well as this, Bro. Hutchinson will have to work hard at his end of the "evener" to keep up.

IT will be remembered that *we* didn't get a taste of those honey caramels sent by the Muths —they were gone before we could. Another box was sent for us. We try to be generous, but somehow that second lot was nearly all gone before any one else had a chance at them. This is not a paid editoral (because this space can not be bought at any price), but an expression of opinion of the deserved merits of the new honey confectionery. Then, too, we see in this candy a big outlet for honey, and the Muths should be encouraged. See their "ad" elsewhere.

VARIETY is the spice of life; even in journalism. If all our correspondents wrote in the same conventional style, even on new and pleasant themes, there would be a sort of tiresome sameness. We have in the past varied the routine somewhat by the introduction of Stray Straws, Rambler, and other illustrated articles, and some others of a peculiar nature. In this issue we let a new writer introduce himself in his own way, in the personage of Jake Smith. We have long had him in mind; and, knowing his quaint, honest ways, asked him to write. This he has consented to do.

ON page 37 of the last *Review*, E. A. Daggitt has a valuable article on smokers. He says, quite truly, that the big end of the bellows should point toward the nozzle of the smoker, and that said nozzle should be curved, so as to send a stream of smoke at right angles to the plane of the bellows. This arrangement is handier in that the smoker can be held right side up, and as the thick end of the bellows then comes between the thumb and fingers, a better and more satisfactory hold is maintained. From numerous trials that we have made of smokers made on this combination, we are sure the principle is right. By the way, the Crane smoker is nearing perfection, and arrangements, we hope, will be made soon to put them on the market. Its smoking capacity is simply wonderful.

OF the colonies under absorbing cushions, nine are dead so far (Feb. 27) this winter. Those under sealed covers can not be readily examined without breaking the sealing, and, of course, we can not tell how such colonies compare with those under absorbing cushions; but we shall know in the spring. So far as we can determine from the *appearances* at the entrances of colonies under sealed covers, all is going well. Of the nine dead ones mentioned at the outset, four died from dysentery, and the rest apparently froze to death, being very weak late in the fall. It is evident that the very severe winter so far will go a little harder on outdoor-wintered colonies. Those in the cellars or repositories will winter fully as well as if not better than last year, or, in fact, during three or four of the preceding open winters.

AFTER reading the proof-page of Mr. Cowan's article in this issue, regarding Prof. Cook's quotation from "The Honey-bee," it occurred to us that possibly our proof-reader was inadvertently responsible for the change in the reading of the passage in question. An examination of the manuscript shows that the matter was printed exactly as written. We are sure Prof. Cook did not *intend* to misrepresent Mr. Cowan's views; but a hasty reading, probably, caused him to skip the comma; and, as the sentence seemed to support his position, he, without saying they were his own, unwisely indicated italics on the word "digestion," to give his understanding of the passage greater force. Of course, it will be seen that this made quite a decided difference in meaning—one that its author does not care to father; hence there is all the more reason that Mr. Cowan should be allowed to explain himself.

OPIUM AND STARVATION.

Mrs. Axtell sends us tract giving the following statement:

"The gross annual revenue derived by the Indian government from opium has not been far from $32-000,000."

Then she pencils in the margin:

It is the devoting of so much land to the production of the poppy to get opium, so the *Missionary Herald* says, that is one great cause of the famine in India—it is *the* great cause.

Roseville, Ill. MRS. L. C. AXTELL.

IT is a mistake to "pull up stakes" too hastily, leave your own locality, a good one, and go to one in California that may, perhaps, not be as good. Frank McNay, that big bee-keeper in Wisconsin, would make a mistake to go to California. He can do better where he is. See his article in another column. It seems, also, that all bee-keepers in that State of the setting sun do not make the business pay. See W. G. Hewes' article elsewhere.

IN the letter by Mrs. M. Louisa Thomas, in our issue for Jan. 15, page 51, it seems a couple of errors crept in. Mr. Cowan, in writing in regard to them, says:

There are one or two errors which are probably are due to the printers. It is said that I spent many years in Africa, Asia, and Russia. Quite true as regards Russia; but I have been only some weeks in Africa, and not at all in Asia, although I have been within a few miles of it. Then instead of "medals" it should read *models* of bees which I showed her.

Of course, it should have been *models*, and we acknowledge *this* as our mistake.

Some of our readers may be surprised, perhaps, to see so many things in this number dating several months back. Perhaps some of you will recognize things that you had long ago given up as having been consigned to the waste-basket. Be patient, dear friends; and if God gives me strength I expect to dig up many golden grains out of those same heaps that have been waiting for somebody with brains enough, and strength of body to cull out the most valuable from the comparatively unimportant that oftentimes prefaces and follows after. A. I. R.

BEGINNERS, AND INVENTING NEW HIVES.

EVERY once in a while in our correspondence some bee-keeper—evidently a beginner—tells us that he has made a new and important invention in hives, and wants to know what we will give him for an interest in it, before he has even told us what it is. We generally write back, "Why, friend Jones, how do you suppose we can make you a proposition until we know what you have to offer?" This brings a letter giving in detail the principles of the new hive; but we are cautioned not to "give it away." With scarcely an exception we find that our friend has combined together a lot of old exploded and abandoned ideas on the construction of hives; and when we attempt to do him a kindness by telling him these facts, and that it will be foolish for him to invest very much money in it, he curtly informs us that our knowledge in regard to hives must be rather limited and queer, and adds that he has a hive that will outsell any thing else; nevertheless, that is the last we ever hear of it. There is lots of fun in trying to invent something new — something far superior to what the fathers of American bee-keeping have settled down on as being the best; but as a general thing it does not pay. We do not wish to discourage inventions in apiculture; but we do say that *beginners* had better wait until they have had considerable experience. It seems that our co-workers, the editors of the *British Bee Journal*, have had experiences in this line similar to our own. As it echoes so perfectly our own feelings, we reproduce a footnote of theirs, in answer to a correspondent who has just invented a "new" hive:

It is always pleasing to read of the zeal with which young bee-hands devote themselves to new methods of management, and especially to improvements in hive-making. But for years past we have, in our capacity of advisers, invariably recommended those less experienced to "go slow" in these matters; and the soundness of this advice has never been questioned by those who have passed through the "experiment stage" of their bee-keeping. We therefore once more repeat ourselves, and advise the trial of one or, at most, two hives on the plan proposed; then judge if it fulfills the conditions claimed for it. For the rest, our columns are open for any *pros* and *cons* our readers may feel disposed to express on the new hive.

NEW RULING REGARDING THE MAILING OF QUEENS TO FOREIGN COUNTRIES.

WE have just received copies of the United States Official Postal Guide for 1892. Knowing that the postal authorities of the Australian Colonies had made some new and favorable rulings in regard to receiving into their ports queen-bees, we turned at once to the paragraph relating to foreign mails, in the new Guide. On page 918, paragraph *j*, we read the following:

j. Live bees in wooden boxes closed with a wire screen protected by a movable wooden lid may be sent to the Argentine Republic, the Australian Colonies (British), Austria-Hungary, Belgium, Bosnia-Herzegovina, Bulgaria, Canada, Chili, Colombia, Congo, Costa Rica, Dominican Republic, the Danish West Indies, Egypt, France, Germany and the German Protectorates, Greece, Guatemala, Hayti, the Hawaiian Kingdom (Sandwich Islands), the Republic of Honduras, India (British), Italy, Liberia, Luxemburg, Mexico, Netherlands and the Netherlands Colonies (including Curacoa), Nicaragua, Norway, Paraguay, Portugal and the Portuguese Colonies, Roumania, Siam, Spain, Sweden, Switzerland, and Tunis, as "samples of merchanise.

It will be noticed that the new ruling includes the Australian Colonies. In the old one these colonies were conspicuous by their absence; it also made a restriction as to the size of the cage; *i. e.*, 5x2x1½. For various reasons we found it was undesirable to conform exactly to this size; but by the new ruling we are permitted to make whatever size of cage we desire, providing we do not go beyond the weight of 8¾ ounces as specified under sample of merchandise; and the extreme weight of the queen-cages so far sent to Australia has never averaged more than 3 ounces. With regard to postage on samples of merchandise, we observe that the charge for packages not in excess of 4 oz. in weight is 2 cents per package; therefore the postage on a cage of queen-bees, such as we have been in the habit of sending out, will be just 2 cents instead of 98, that we have been compelled to pay under the old rulings requiring letter postage. We can now send queens more cheaply to Australia than we can to a little town four miles distant from Medina. This is going to prove to be a great boon to bee-keepers all over the world, and will render it possible to introduce valuable strains, not only in the United States, but all over the world, at a cost that is simply insignificant. We are indebted for a large part of this valuable ruling to the bee-keepers of Australia—particularly to Mr. W. S. Pender, of West Maitland. Verily, the world does move.

PLAYING WHILE YOU ARE AT WORK.

I HAVE had a good deal to say about work and wages in years past. I have tried to tell a great class of unfortunate people why they do not get better wages. An incident right in line with this is just before me. The neighbor who furnishes the hot-bed sash I spoke about in our last issue has some quite expensive wood-working machinery. Well, his men and boys got a fashion a while ago of throwing blocks and other things at each other. For instance, a man would be very busy, leaning over his work, it might be a buzz-saw or some other dangerous piece of machinery, when somebody, for a joke,

would throw a block and hit him in the back. Of course, the man would start up and look around to see who threw at him, but every one would be sticking to his work, apparently. Now, it seems to me that I hardly need tell you that this is a dangerous matter in a room full of hands and full of machines. A man might start so as to get his hand caught in a machine or in a buzz-saw. Almost ever since we began manufacturing, we have been sorely tried by this sort of foolishness. We can excuse a boy for acting boyish—at least, before he has been told *why* it would not answer; but a grown-up man who can not be taught to get over this kind of foolishness ought to work for low wages; and if that does not help him, he ought to lose his place. Well, a few days ago somebody who works for this neighbor picked up a piece of cast iron that had been chipped off from some machinery. He threw it, and it struck a man on his back. Then it bounded into a machine, got into the gearing, and a breakdown that cost, I have been told, something like *two hundred dollars* was the result. Who threw the piece of metal? The proprietor spent a good deal of time and very much pains, but he has not found out yet. The one who did it is not man enough to own up and take the consequences; and if the others know, they won't tell. I believe it would be a good idea if the friends who work in shops would cut this out and paste it up, or give it to the boss and let him read it to the hands. Now I will tell you how it affects wages. In the first place, the hands who work in that shop have got to make good that $200, sooner or later, or, at least, a great part of it. Unless the business pays expenses, including breakdowns, the proprietor can not pay the same wages and go on with his work. In the second place, the boss can tell in a very little time which hand would be *likely* to throw blocks and which one would not. In talking the matter over with the foreman of our lumber-rooms, I spoke something like this:

"Look here, Mr. W., the boy you see going along there will never be in any such work as that."

Mr. W. assented. The reason is, the boy has been carefully brought up by hard-working Christian parents. I spoke again:

"Now, there are A and B, who have been begging for work almost all winter. One is a boy, and the other is a grown-up man. Either one of them would throw blocks, or play tricks on the rest of the hands, any time he felt sure the boss was not likely to be around."

The foreman again nodded his head. You see, friends, it does not take very many weeks nor even *days* to take the full dimensions of any boy, or man either, in this respect. You may think you are sly, and that you succeed in cheating; but not only is God's all-seeing eye upon you, but those *round about you* know the real state of your heart better than you *think* they do. A. I. R.

THE UNION'S EARLY 1893 VICTORY.

The Union, it seems, is not less an exponent for the cause of bee-keeping than it was before. Already it has scored an important victory, affording another valuable precedent. General Manager Newman writes:

Brother Root:—The "first round" for the year 1893, in the battle waged by the enemies of the pursuit of bee-keeping has ended disastrously for them. The *National Bee-keepers' Union* comes out as usual, triumphantly, and I think the members of the Union who read GLEANINGS will be pleased to read the news.

On Jan. 16th, as soon as the Senate of Missouri got to work, Senator Sebree introduced the following, entitled, "An Act to regulate the keeping of Honey-bees in Cities, Towns, and Villages in this State, and to provide a penalty for its violation." The full text is as follows:

Be it Enacted by the General Assembly of the State of Missouri, as follows:

SECTION 1.—No person shall own, keep, or have in his possession or under his control, any honey-bees in boxes, bee-gums, or other thing of confinement, in any city, town, or village in this State, whether organized under general or special charters, nearer than fifty feet from the line of any adjacent real-estate owner, or person in possession of such adjacent property.

SECTION 2.—Any person violating the provisions of the preceding section shall, upon conviction, be fined for each offense not less than ten nor more than twenty dollars, and each offense shall be deemed a period of one week after one notice in writing shall have been given to the owner or person in possession of the bees to remove the same to a distance provided by the first section of this act; and if, after notice, the owner, or owners, or party, in possession of said bees, it shall be the duty of the sheriff of the county, or the constable of the township, in which the offense is committed, to remove the said bees to the said distance of fifty feet; and for reasonable compensation for his services he shall have an act of debt against the owner or person in possession of said bees; and the said bees, nor the boxes or bee-gums, nor any thing in which they shall be kept, shall be exempt from execution to pay the judgment founded upon such claim for said services for removing the same as aforesaid.

SECTION 3.—If the said honey-bees can not be removed and kept in boxes, bee-gums, or other thing at a greater distance than fifty feet from the line of the adjacent owner or proprietor, as provided by section 1 of this Act, then in such event the keeping of them in such city, town, or village is absolutely prohibited, and, after ten days' notice in writing to remove the same, the owner or person in possession or control of them shall be punished upon conviction, as provided by Section 2 of this Act.

Here is a clear case of prohibition of the pursuit in all "cities, towns, and villages" in Missouri, if it should become a law, for a bee-keeper must have *over* a 100-foot lot to be able to keep his bees "fifty feet from the line of any adjacent real-estate owner, or person in possession of such adjacent property." But few bee-keepers would have more than 50 feet in all.

Mr. W. S. Dorn Blaser, ex-Secretary of the Missouri Bee-keepers' Association, sent the "Bill" to the Manager of the Union, and instantly the Decision of the Supreme Court of Arkansas was brought into play like a Gatling-gun, and copies of it were sent to the members of the Legislature and to the Governor. Letters were written to them, advising them not to allow it to pass, showing that it would be a dead letter, as it was unconstitutional, and would be so construed by the courts, as they had the precedent of the Arkansas Supreme Court to guide them.

The Hon. R. L. Taylor, President of the Union, was appealed to, and he backed up the General Manager, by giving his "opinion" on the bill—that it was unconstitional, and should be "fought to the end" vigorously.

Mr. Joseph G. Banning, President of the Missouri State Bee-keepers' Association, also appealed to the Manager of the Union, and was instructed to fight the bill at every step—that the Union would see him through, etc. If it had passed both houses, then the Governor would have been appealed to, and would in all probability have vetoed it. President Banning writes me thus: "I thank you for your prompt assistance."

When it came up in the lower House, the legislators were "posted," and promptly *killed* it. And thus ends another chapter in the "Comedy of Errors" of the enemies of apiculture! The Union is again triumphant, and adds "another feather in its cap."

A similar "farce" is now being enacted in Nebraska, but it will doubtless end in a like fizzle. Bee-keepers have a right to be proud of the achievements of their Union for Defense.

THOMAS G. NEWMAN,
General Manager.

Hurrah for the Union! It should have good and hearty support. As it will have other important work, perhaps, in other lines for this year, the membership should continue to increase.

SPECIAL NOTICES.

Cold-frame cabbage-plants sold out for this season.

SHOEPEG SWEET CORN, FOR SOWING BROADCAST FOR FODDER.

We have a quantity of this, harvested in 1891. It germinates from 50 to 75 per cent. We offer this, while it lasts, at 50c a peck, or $1.50 per bushel.

POTATO ONIONS CHEAPER.

Since our last, I have succeeded in making a purchace so that we can furnish either the small onions to plant at once, for bunching onions, or the large ones to be put out to make small ones or sets, at a uniform price of 90c per peck; $1.75 per half-bushel, or $3.00 per bushel, for immediate orders.

NUCLEUS HIVES CHEAP.

That extractor at Northville, Mich., which we offered in last issue, is sold; but we have at the same place to dispose of, 10 double 3-frame nucleus hives. Each hive contains six wired Hoffman frames, with a division in the center, making two 3-frame hives in one. We will sell them for $1.00 each, five for $4.00, or $7.50 for the 10 complete, put up and painted ready for use.

OUR NEW CATALOGUE.

As soon as this issue is printed we begin printing the spring edition of our catalogue. It is printed from electrotype plates, cast from new type, and is a great improvement over former issues. There are some few important changes which will be mentioned later. We shall hardly have it completed before April 1st; but as soon as done we expect to send one to each reader of GLEANINGS as well as our last year's customers. You need not, therefore, send for one if you are a subscriber or customer, for you will get one as soon as finished.

"CELERY FOR PROFIT."

A new book, full of pictures, by our old friend Greiner, has just been placed on my table. It is written in the author's bright, hopeful, and intensely happy and interesting vein; and the illustrations all through are up to the very latest date. It covers the ground of the new celery culture entirely; discusses the latest method of irrigation, etc. When I laid it down I felt like saying that there is not another man in the world who can write books on gardening, with the life, energy, and enthusiasm of Greiner. The time has gone by for books full of dry, dull, and prosy details, especially on rural subjects. Price 30c. We can furnish it, or you can get it of Burpee, the publisher.

GARDEN SEEDS—ADVANCE IN CERTAIN KINDS.

As usual at this season, certain things that are much called for begin to be cleaned out of the market, and, of course, prices must advance. For instance, we shall probably very soon be obliged to make an advance on onion-sets of all kinds—American Wonder peas, Prizetaker and Globe Danvers onion seed, and there may be some others. We will fill orders just as long as we possibly can; but when we have to pay more for the goods than the prices we advertise, there will have to be an advance without notice. I do not like advances—it makes bad work, I am well aware; and we have a good many times sold seeds for exactly what we paid for them, rather than to annoy our customers by telling them that certain things had "gone up."

VEGETABLE-PLANTS READY MARCH 1.

Owing to the very severe weather, we have very few transplanted plants of any kind, unless it is the Grand Rapids lettuce. We have a splendid stock of these, well rooted. The regular prices are 40c per 100, or $2.50 per 1000. We have a fine stock of almost every thing direct from the seed-bed, if any of our friends should want them that way. We have onion-plants that would do to put out under glass, but not quite strong enough to go into the open field. Asparagus-roots and strawberry-plants we shall be ready to ship as soon as the frost is out of the ground; and appearances are just now that it will be out in three or four days. We can ship horseradish roots at any time.

MORE CARLOAD SHIPMENTS.

As we go to press we are loading the second car for W. K. Ball, Reno, Nev., and Inyo Co., Cal. We have received an order for a carload of supplies from Vickery Bros., Evansville, Ind., which will be shipped soon. We expect also to make up another carload for Southern California; and if any of our readers in that section desire to take advantage of this opportunity they should respond at once if they would be in time. Write direct to us or to G. G. Wickson & Co., Los Angeles or San Francisco, Cal.

ONE-PIECE SECTIONS.

Our new machinery for making sections does not materialize as soon as we had hoped, and it is doubtful whether we get it in readiness for much if any work this season. The sections we are now making by the old method are much improved over former years, and about as near perfection as it is possible to get them. The main thing that we hope to accomplish by the new machinery is to cheapen the cost of production. In the meantime we are content to work on a closer margin of profit, and sell you sections as cheap as you can get an equally good article elsewhere. Remember, our sections are now put up in slatted boxes holding 1½ bushels, and worth about any home 25 cts. each for handling or storing potatoes, apples, or for a multitude of purposes that will suggest themselves to an economical householder. Our price on any width of the 4¼ sections will be as follows. Of No. 1 cream, we have only 1⅞ and 1 13/16, open top and bottom; and of No. 2, only 1⅞, open top and bottom. Other widths of these grades not furnished.

	100	250	500	1000	2000	3000	5000
No. 1 Snow-white	.50	.85	$1 50	$3 00	$5 80	$8 50	$13 50
No. 1 Cream	.45	.75	1 25	2 50	4 90	7 10	11 25
No. 2.....	.40	.60	1 00	2 00	3 90	5 70	9 00

STILL ANOTHER BOOK ON GARDENING, "MARKET GARDENING AND FARM NOTES."

For the first time in the world, or, at least, so far as I am informed, one of the *Landreths* has consented to write a book. The Landreths, you know, are the old veterans in the seed business of the United States. This book, too, is well up to the times, and exceedingly interesting. But although it treats of greenhouses, gardening under glass, etc., there is not a single picture in the whole work, from beginning to end. Aside from this, the book is full of valuable suggestions. The author agrees with me fully, in regard to having glass structures so made that the plants can be "turned outdoors" whenever the weather will permit. See the following extract from the book, p. 88:

CARE OF HOT-BEDS.

"Hot-beds should be covered early in the evening, to retain their heat, and in the morning uncovered when the sun rests upon the glass, as every effort should be made to give the plants all the sunlight possible, as its rays are vivifying to a degree beyond the amount of its heat, it having a chemical and physiological effect beyond explanation. Even dull light is better than no light, consequently it is a bad plan to cover sashes with mats, except for the direct purpose of keeping out cold."

The book gave hints worth its cost before I had it in my hands 15 minutes. Price, bound in cloth, $1.00. Published by the O. Judd Co. We can mail it at the above price if desired.

MAPLE SUGAR AND SYRUP.

The season is upon us when the sweet is harvested from the sugar maples. None of these delicious sweets has been brought in by the producers yet; but with the beautiful weather we are now having it will not be many days before we shall have a plentiful supply for all demands. We have some good syrup of last year's production that we will sell, to close out, at 90 cts. per gal.; 5 gallons, $4.25, or 10 gallons for $8.00, all put up in gallon cans, and guaranteed pure maple. In fact, we do not handle any maple products that we will not guarantee pure maple, so that our readers need not fear to order lest they get something adulterated. We will stake our reputation on the purity of goods we handle. Our prices for the choicest new maple syrup will be, for a single gallon, $1.10; 10 gallons or more, $1.00 per gallon. Maple sugar we divide into three grades—No. 1, at 10c per lb.; No. 2 at 9c, and No. 3 at 8c. In lots of 50 lbs., ½c per lb. less. In barrel

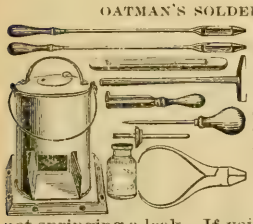
lots of 300 to 320 lbs., 1c less. We handled last year seven or eight thousand pounds of sugar, and over 1000 gallons of syrup, and will be prepared to supply all wants this season. It will likely be toward a month yet before we shall have these products in considerable quantities.

ROOT BROS.' REPAIRING OUTFIT.

This is made by Root Bros., of this place—an entirely different firm from A. I. Root. It is a splendid outfit, and is having an immense sale.

This consists of the tools and materials shown in e cut. It enables one to do his own half-soling, rubber, boot, shoe, and harness repairing. No pegs needed—simply wire clinch nails. Saves time, trouble, wet feet, vexation, and expense. Any boy can use it. Every body that gets one is delighted with it. The whole outfit, neatly boxed, weighs 20 lbs. Price, only $2.00, or 3 outfits for $5.00; 6 for $9.00. We will mail special circular with further particulars, on application.

OATMAN'S SOLDERING OUTFIT.



Here is another outfit put up in Medina that deserves special mention. The cut shows what it includes; and it occurs to me that this is quite as indispensable about the home as the shoe-repairing outfit, if not more so. There are few homes in which some of the tinware is not springing a leak. If you had the tools at hand to fix it at once, you would save it; but, ten chances to one, it is allowed to grow worse, and is finally thrown away. If you should think of it when you go to town, and carry it to the tinner to fix, you are put to a good deal more trouble than if you did it at home yourself, and, very likely, have to pay half what the article is worth to have it mended. I'll guarantee that this outfit will easily pay for itself in a year or less, in almost any home, by the mending-bills and tinware it will save. Price only $2.00; six for $10.00. The outfit weighs boxed about 12 lbs.

THE AUGITE STOVE MAT, AGAIN.

An article that is causing such a sensation as this, and that is proving itself such a blessing in every home that it enters, deserves frequent mention. Like other valuable articles it already has imitators. One of these, called the Crown mat, we could buy for less money than the augite: but having examined a sample dozen, and compared them with the augite, we have decided that the latter is much the cheaper at the slightly advanced price that we have to pay. A dozen Crown mats weigh only two-thirds as much as a dozen augite; and, being more flimsy, they will not wear as well, nor do the required work as well, because thinner. The other imitator is called the Fle cher fire-mat. The sample of this we examined is fully as heavy as the augite, but the rim was not nearly so neat, and the general appearance of the mat was not as nice as the augite, and it is no cheaper, so it cut no figure. The prices we are making on the augite mats are exc edingly low. We are able to make these prices because of the quantity we handle, which reaches five gross every week or ten days. We have had over forty gross from the factory in the past four months, and sales are increasing. Our present prices, as given in last issue, are as follows: By mail, postpaid, 1 for 25c; 3 for 65c; 5 for $1.00; 12 for $2.20. By freight or express, you paying the charges, 1 for 20c; 3 for 50c; 12 for $1.60; 3 doz. for $4.50; 6 doz., $8.00; 12 doz., $15.00.

Here is one of the many testimonials received in regard to the mat. This comes from the wife of A. V. Bishop, of Milwaukee, Wis., who quotes for the Honey Column. With an order for six dozen, she says:

They are one of the wonders of this age—one of the "secrets" the Father has had in store to be revealed in these last days for our comfort and daily convenience. No one can afford to be without one or two in the household.

The anxious and careful cook
Can now wear a pleased and happy look,
And speak in fullest praise
Of the mat in tuneful lays.

Yours truly, MRS. A. V. BISHOP.

Milwaukee, Wis.

SECOND-HAND FOUNDATION-MILLS.

We have the following list of second-hand foundation-machines which have accumulated during the past few months, some in exchange for new machines, others from those who have decided to buy what foundation they use. We give as fair a description as we can of these machines, with the price at which we will sell. We can furnish samples from any of the machines to intending purchasers.

One 6-inch hex., No. K, thin surplus mill, in good order. Price $9.00.

One 6-inch hex., No. S, in fair order for surplus foundation. Price $9.00.

One 6-in. hex., No. Q, in fair order, old-style frame; for fdn. about 8 to 9 ft. per lb. Will do well for strips of light brood fdn., or rather, heavy surplus. Will sell for $8.00.

One 6-inch hex., No. R, nearly new, late style, for thin surplus. Will sell for $12.00.

One 10-inch, round cell, No. E, old-style frame; made some years ago, but used scarcely any, and in good order. Price $14.00.

One 12-inch Dunham mill for heavy brood fdn.; in fair order; will sell for $12.00.

SECOND-HAND MACHINERY.

During the past few months we have bought up several outfits of machinery for making bee-keepers' supplies; and if any of our readers or their friends contemplate putting in machinery we are prepared to fit you out from cellar to garret with everything you need in engines, boilers, machinery, shafting, pulleys, hangers, belting, saws, etc. The following is a partial list of the second-hand machinery we have to sell. If you desire further particulars we shall be pleased to hear from you.

One 20-H. P. Fishkill horizontal engine, rebuilt, and as good as new; would cost new, $400; will sell for $200, or with new boiler for $400.

One 24-inch two-roll Fay sandpaper machine, nearly new. Price, new, $450; will sell for $175.

One V-groove section machine, nearly new. This is our make, old style, with screw-feed; sold some years ago for $75; will sell now for $40.

One double-head tenoning-machine, especially arranged for making the combined rabbet and miter joint of the Simplicity hive, but can be used for making sash and window-screen frames, etc. We could not build such a machine, and sell it for less than $150; we will sell this for $60.

Two extra large saw-tables for general use, to cut off or rip, with counter-shaft attached to frame; worth new, $50 each; will sell for $20 each.

Two four-piece section-machines, as good as new; they cost new, $85 each; we will sell them for $30 each.

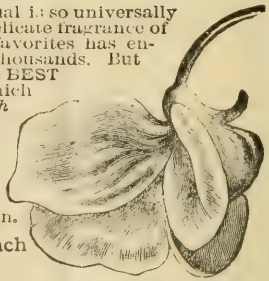
5=BANDED
3=BANDED BEES.
Nucleus colonies. Circular free.
3-8db J. F. MICHAEL, German, Darke Co., O.

Eastern Supply House.
We furnish every thing used in the apiary, and at bottom prices. Illustrated circular free.
I. J. STRINGHAM, 92 Barclay St., N. Y.
21 20db Please mention this paper.

SWEET PEAS

ARE ALL THE GO!

No other Annual is so universally popular. The delicate fragrance of these old-time favorites has endeared them to thousands. But do you know the BEST NOVELTIES which have created *such a furore* of late? While retaining all their sweet simplicity, these new types display rich and exquisite coloring, with flowers of larger size and more graceful form. To still more widely popularize this floral favorite, we planted ACRES OF SWEET PEAS the past season, and harvested *over seven tons* (more than 14,000 pounds) of the choicest seed, enabling us to offer a collection of most beautiful rare Novelties at a bargain.



FOR **25 Cents** we will mail one packet each of ALL the following:

BOREATTON. A grand variety with very large flowers, borne in threes; color fine, deep maroon throughout; unique.

LOTTIE ECKFORD. Lovely, long-stemmed flowers, borne profusely in clusters of three; clear white, delicately shaded porcelain blue, distinctly and broadly margined lavender.

QUEEN OF ENGLAND. Magnificent white flowers of large size and good substance, borne abundantly.

ORANGE PRINCE. The rarest of all colors; splendid long-stemmed flowers of bright orange-pink, flashed with scarlet; very distinct.

We have a beautiful colored plate, painted from nature, of the four distinct new Sweet Peas named above, which we will mail enclosed flat with our FARM ANNUAL for 1893.

ECKFORD'S GILT-EDGE, or SURPASSING SWEET PEAS. This grand strain of new Sweet Peas in mixture is unequaled. It includes not only the best of Eckford's novelties, but also many new seedlings not yet named and of surpassing beauty.

With each collection sold for **25 cents,** we present our new book

"All About Sweet Peas,"

just published. Nothing of the kind ever attempted before. A charming recital of fact and fancy, it tells how to have a profusion of SWEET PEAS every day for months. Fully illustrated, handsomely printed, beautifully bound, it is really *an Art Monograph* alone worth the price of the collection but is mailed FREE with every order.

Will you not show this unequaled offer to your friends? We will mail FIVE COMPLETE COLLECTIONS, with five books, FOR $1.00, and we guarantee that every purchaser will be delighted.

ORDER NOW, and ask for

Burpee's Farm Annual For 1893

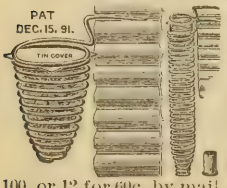
the most complete Seed Catalogue of the year. With honest descriptions, truthful illustrations, and colored plates painted from nature, it tells all about the BEST SEEDS, including RARE NOVELTIES in Vegetables and Flowers, which cannot be had elsewhere. **WORLD'S FAIR CASH PRIZES.**

Please mention this paper.

W. Atlee Burpee & Co., Philadelphia, Pa.

In writing to advertisers please mention this paper. 21 20db

CONTROL YOUR SWARMS.



N. D. West's Spiral Wire Queen-Cell Protectors will do it, and you can RE-QUEEN your apiary during the swarming season. Pronounced the best by such men as Capt. J. E. Hetherington, Cherry Valley, N. Y.; P. H. Elwood, Starkville, N. Y., and others. Cell-Protectors, $3.00 per 100, or 12 for 60c, by mail. Cages, $5.00 per 100, or 12 for $1.00, by mail. Samples of both, with circular explaining, 25 cts. The cages are used for hatching queens in any hive, and are the best Bee-Escape in use. Address

N. D. WEST, Middleburgh, Schoharie Co., N. Y.

responding to this advertisement mention GLEANINGS.

Berries.

Friends, I can furnish you with all kinds of berry-plants at about one-half the usual price. Plants warranted. Bank references. Satisfaction guaranteed. 6tfdb Address **EZRA G. SMITH, Manchester, N. Y.**

Golden Queens From Texas.

My bees can not be surpassed for business, beauty, and gentleness. Safe arrival and satisfaction guaranteed. Untested queens March, April, and May—$1 each. **50** fine Tested Queens for early orders. $1.50 each. Order early. Send for price list. 5-16db.

J. D. GIVENS, Box 3, Libson, Tex.

Eggs and Plants.

Several varieties. Best quality. Any quantity. Finely illustrated catalogue free. Address GEER BROS., St. Marys, Mo., or H. B. GEER, Nashville, Tenn.

GOOD SECTIONS CHEAP!

We have a few thousand sections that are not all perfectly smooth, but are GOOD sections. We offer them, 500 for 80 cts.; 1000 for $1.50; 3000 for $4.25. All widths. 5-6

I. J. STRINGHAM, 92 Barclay St., N. Y.

☞ In responding to this advertisement mention GLEANINGS.

Low Freight Rates and No Delays.

When you are considering where to send for your supplies the coming season, get prices and a list of goods on hand, from one of the following dealers, who handle **ROOT'S GOODS** in carload lots, thus securing them at lowest cost. Most of them, except those far distant, sell goods to users at factory prices, while those far distant add approximately only the carload rate of freight, so that you will **Save Time and Money** by buying your supplies of one of these dealers. We can not give here a list of goods kept, as it varies some at the different places according to the varying needs of each locality. Write to the place nearest you for list with prices, and when you write give a list of the goods you want, and mention this paper.

Quite a full line of goods are sold at factory prices by
F. A. Salisbury, Syracuse, N. Y.
H. G. Acklin, 1024 Mississippi St., St. Paul, Minn.
Jos. Nysewander, Des Moines, Iowa.
A good assortment is also kept for the Far West by
Barteledes & Co., Denver, Col.
For California by
G. G. Wickson & Co., San Francisco and Los Angeles.
For Oregon and Washington by
F. L. Posson & Son, Portland, Oregon.
For the Southeast Atlantic coast by
Baltimore Farm Implement Co., Baltimore, Md.;
and for the Far South by
J. M. Jenkins, Wetumpka, Ala.

A smaller assortment, consisting chiefly of Dovetailed hives, sections, smokers, foundation, and extractors is also kept by the following:
Henry F. Hagen, Rocky Ford, Colo. W. K. Ball, Reno, Nev. W. O. Victor, Wharton, Tex. John Nebel & Son, High Hill, Mo. Thos. G. Newman, Chicago, Ill. Walter S. Pouder, Indianapolis, Ind. Vickery Bros., Evansville Ind.

Our Hives, Comb Fdn., Sections, Smokers, Extractors, Perf. Zinc, etc., are furnished by a multitude of other dealers too numerous to mention. If you want to buy goods made at the Home of the Honey Bees, you can get them as cheap as you can anywhere when you consider quality and workmanship, and your orders will be taken care of promptly. Don't expect to get all the goods we advertise, from any of above dealers, and don't expect to get goods they do not agree to furnish; but find out what they agree to furnish, and at what price, by writing for list to address nearest you.

A. I. Root, Medina, O.

In writing to any of above please mention GLEANINGS.

I TELL you what, Jones, **Levering Bros.** sell the best goods and at the lowest price of any one I've struck yet. The largest and best equipped

Bee-Hive Factory

in the West. The Dovetailed Hive and New Hoffman self-spacing frame a specialty. Every thing used by practical bee-keepers at wholesale and retail. Send for their free Illustrated Price List, and save money. Supply Dealers, send for their Wholesale List. Address

LEVERING BROS.,
Wiota, Cass Co., Iowa.

3-14db

Please mention this paper.

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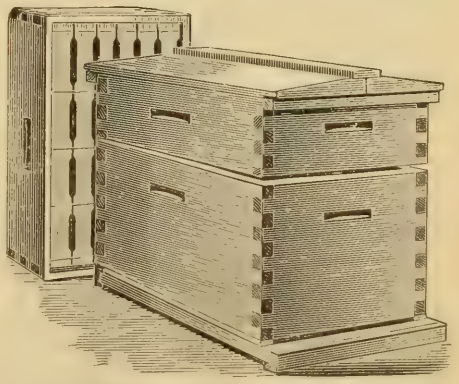
14 Railroads

to carry the goods we manufacture to all parts of the country. Can cut any hive ordered. Langstroth improved Simplicity a specialty. All kinds of Bee Supplies, Queens and Bees. Light and dark colored Ferrets. Send for price list.

R. E. HARBAUGH,
25th & Clay Sts., St. Joseph, Mo.

2tfdb

Please mention this paper.



THE HIGGINSVILLE DOVETAILED HIVE.

NO MORE leaky covers. The above cover will shed water, and will not warp like the old-style flat cover. Send for our 24-page Catalogue of all kinds of Bee Supplies. Address **LEAHY MFG. CO.,**
Higginsville, Mo.

3-4-5d

Mention this paper.

California.

California.

CALIFORNIA !
Bee-keepers' Supplies,
WHOLESALE AND RETAIL.

We keep everything that is of practical use in the apiary. We make a specialty of Langstroth hives, and 60-lb. Honey-cans and Cases; also Comb Foundation.

Apiaries for sale.

We are also prepared to buy all the water-white Honey in Southern California, and pay the highest market price for the same.

Every one send for catalogue free to

L. E. MERCER & SONS,
Ventura, Cal.

California.

California.

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5 BANDED QUEENS, 3 BANDED QUEENS, | SUPPLIES of all KINDS.

Eggs for Hatching from B. Plymouth Rocks and Brown Leghorns. Discount on early orders. Catalogue free. **CHAS. H. THIES,**
5tfdb **Steeleville, Ill.**

Texas Headquarters
For Apiarian Supplies.

Italian Bees and Queens. Root's Dov. hive a specialty. Foundation, made on shares or exchanged for beeswax. **W. O. VICTOR, Wharton, Tex.**

CONCORD GRAPEVINES.

Strong, thrifty Concord grapevines, for shading bee-hives, or for other purposes, 10 cts. each; 85 cts. for 10; $6.50 per 100. If sent by mail, add 5 cts. each extra. Those sent by mail are only one year old, for the larger ones would be too heavy. The others are *three years old*, and have extra strong large roots. If over 50 vines are wanted, they had better be shipped by freight. There is not a bit of risk in sending grapevines by freight, for they can be packed so as to keep safely a month, if need be, if they are ordered early in the spring.

Send orders to **DR. MARTIN,**
Rising Sun Nurseries, Mercersburg, Pa.

☞In responding to this advertisement mention GLEANINGS

FOR SALE.

Italian and Hybrid Bees, in Dovetailed hives. Price $3.50 and $4.00 per colony.
H. BENNETT, Union Furnace, O.

For Sale! 10 Root's Dov. hives, complete, 5 in flat, and 5 nailed up and painted; 4 Root's complete Simplicity hives, nailed and painted. Price of above hives, all new, $23.00. Also one Victor safe, new, weight 600 lbs. First cost $35.00. Will sell for $20.00. Write
W. S. STEVENS, Mechanicstown, Ohio.

BUY your **HIVES** where lumber is cheapest. That's at LeSueur, Minn. Catalogue free.
5tfdb **F. C. ERKEL.**

BUFF Cochin. BRAHMAS, Light. BEES, Italian.
Circular. 3-10db E. SHIMEL, McCuneville, O.

BEE-KEEPERS, NOTICE.

Send to E. J. SHAY, Independence, Preston Co., W. Va., for catalogue of Apiarian Supplies. 4tfdb

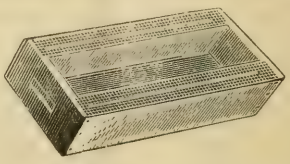
---

TAKE NOTICE.

If you are looking for the bees that give the best profits, and most gentle in handling, try the Albinos. I also have the Golden Italians, and can furnish either variety. But if you ask for my preference I say Albino, and in my circular you can see what others say of them. Send for circular and see how cheap I sell them. I also manufacture and deal in Hives, Sections, Foundation, Extractors, and other Apiarian Supplies. 5-7d
S. VALENTINE, Hagerstown, Md

A. E. MANUM'S LEATHER-COLORED ITALIAN QUEENS

Are superior to all others for business, is the verdict of those who have them. PRICES: one untested, $1; six, $5.50; twelve, $10.00. Tested, $1.50 each. Selected for breeding, $2.50 each. One yearling, tested, *in June only*, $1.00; six, $5.50; twelve, $10.00.



THE MANUM FEEDER.

Models of Manum's new "Rapid" feeder with, full printed directions how to make, and what, when, and how to feed for best results, $1.00 by mail, postage paid. Descriptive catalogue mailed free on application. 5-12db
A. E. MANUM, Bristol, Vt.

☞In responding to this advertisement mention GLEANINGS.

Beautiful Golden Queens.

My five-banded Italians are bred from the very best of stock by Doolittle's improved methods, and mated to the yellowest of drones from selected colonies, and I guarantee them to give entire satisfaction. Untested queens are all warranted purely mated. 1 untested queen, March, April, and May, $1.15 each; $12.00 per doz. Tested, $1.50 each. Select Tested, $2.50. Guarantee prompt and safe delivery. Send for circular. **W. P. CROSSMAN.**
Money-order office. **Ballinger, Tex.**
Reference: 1st Nat. Bank of Ballinger.

WE OFFER
COMB FOUNDATION
WHOLESALE AND RETAIL,
AT VERY LOW PRICES.

Satisfaction and all work guaranteed.

We have ordered our mills, etc., and expect to be able to fill orders in a few weeks. We will arrange for a large capacity, and devote all our time to the business, so orders can be filled promptly. Our prices will be at least from 5 to 10 cts. per lb. below the prevailing prices of other years. We expect our foundation to equal other makes, and to excel them all in a few respects, to which we call your attention in our price list. 5-10db

BEESWAX WANTED. Write for prices.

W. J. FINCH, JR.,
931 E. Monroe St., **Springfield, Ill.**

☞In responding to this advertisement mention GLEANINGS.

FOR SALE

280 acres of timber land; cleared, 25; orchard, 10. Three never-failing springs; large barn; cellar 38x16, house enclosed. Good location for bees. Address
MISS MARY A. WOOSTER, Van Buren, Ark.

SECTIONS.

Any width, No. 1, $2.50 per M. No. 2, $1.60 per M. Foundation. Dovetailed hives, Smokers, etc., cheaper than any other supply house in the U. S. Send for list free. 4tfdb

W. D. SOPER, Jackson, Mich.

GOLDEN WYANDOTTES.

Finest birds in the land. Cockerels, $5.00; trio, $7.00. Eggs, $2.00 per 13.
4tfdb **E. D. KEENEY, ARCADE, N. Y.**

ITALIAN QUEENS. Tested, $1.50; 6 for $7.50. Sent after Mar. 1st. Untested, $1.00; 6, $5.00; or $9.00 per 12. Sent after April 1st. Safe arrival guaranteed. Send for circular of Bees, Queens, Drones, Root's Dovetailed Hives, Foundation, Extractors, etc. **J. N. COLWICK, Norse, Bosque Co., Tex.**

For new price list of *PURE ITALIAN BEES AND QUEENS, AND WHITE AND BROWN FERRETS, ADDRESS* **N. A. KNAPP,** *ROCHESTER, LORAIN CO., O.*

Please mention this paper. 4tfdb

APPLETON'S AMERICAN CYCLOPEDIA 30 volumes. Cost $150.00. For sale at a reasonable price, or will exchange for a high-grade ladies' pneumatic bicycle. Write for further information. Address MRS. ADDIE MILLER, MEDINA, O.

Pacific Coast Bee-men

will find it to their advantage to correspond with the

Clipper Gap Bee-Hive Factory

for prices of Dovetailed hives, Hoffman frames, Honey Sections, etc.

S. F. WOODWORTH, Prop'r,
Clipper Gap, Placer Co., Cal.

4-9db

☞ In responding to this advertisement mention GLEANINGS

Muth's Honey-Extractor.

Square Glass Honey-Jars,
Tin Buckets, Bee-hives.
Honey-Sections, &c., &c.
Perfection Cold-Blast Smokers.

APPLY TO
CHAS. F. MUTH & SON, Cincinnati, O.

Send 10-ct. stamp for "Practical Hints to Bee-keepers." Please mention this paper.

HATCH CHICKENS BY STEAM
WITH THE IMPROVED
EXCELSIOR INCUBATOR.

Lowest priced First class Hatcher made.

Thousands in Successful Operation. *SIMPLE, PERFECT, and SELF-REGULATING.* **Guaranteed to hatch a larger percentage of fertile eggs, at less cost, than any other Incubator.** Send 6c. for Illus. Catalog. Circulars Free.

GEO. H. STAHL, Pat. & Sole Mfr., Quincy, Ill.

☞ Please mention GLEANINGS. 22-9db

A large number of fine queens on hand; yellow and prolific; ready April 15th; warranted queens, $1; 6 for $4.50; select tested, yellow to the tips, suitable for breeders, each, $2. Reference, A. I. Root. 3tfdb
W. H. LAWS, Lavaca, Seb. Co., Ark.

Wants or Exchange Department.

Notices will be inserted under this head at one half our usual rates. All advertisements intended for this department must not exceed five lines, and you must SAY you want your adv't in this department, or we will not be responsible for errors. You can have the notice as many lines as you please; but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices offering articles for sale, can not be inserted under this head. For such our regular rates of 20 cts. a line will be charged, and they will be put with the regular advertisements. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To rent an apiary, or a position as an apiarist in California. Correspond with CHAS. BROWN, Nicolaus, Sutter Co., Cal.

WANTED.—To exchange one well-trained setter dog for Italian bees, or offers; for particulars, address STEWART BROS, Sparta, White Co., Tenn. 4-5d

WANTED.—A young man with some experience in bee culture to work in apiary and fruit orchards. J. W. DAY, Crystal Springs, Miss. 4-5d

WANTED.—To exchange a lot of Simplicity beehives, eight and ten frame, complete, for guitar, Indian game chickens, or offers.
5-6 J. C. PROVINS, Masontown, Pa.

WANTED.—To exchange for clover comb honey, Zuccato's Papyrograph; 300 to 1000 impressions can be taken on dry unprepared paper from the original writing. J. B. ENOS, Connellsville, Pa.

WANTED.—To exchange a 4x5 photographic outfit, cost $30, for beeswax, L. worker combs, honey, or supplies. A. HILLMANN,
4d 290 13th St., Brooklyn, N. Y.

WANTED.—Every one to send for our approval sheets of fine stamps at 50% commission. Agents wanted in every town. S. H. BRAINARD, Box 361, Medina, Ohio.

WANTED.—A situation, to take charge of an apiary in the spring. Have had several years' experience with bees. Prefer California, but would not object to any good locality. P. MARSH,
5-6d Big Stone Gap, Va.

WANTED.—To exchange apiarian supplies for bees or empty combs and a Safety bicycle. Address J. B. MURRAY, Ada, O.

WANTED.—By young man, a position as assistant in apiary. Some experience. Willing to do other work. Offers solicited. W. MANLEY, Yale, Mich.

WANTED.—To exchange for something useful, some Simp. hives (all painted), Moore's crates, T supers, slatted honey-boards, and tin separators. G. GROSS, Milford, Jeff. Co., Wis.

WANTED.—A second-hand Barnes foot-power saw. Improved, in good repair, immediately. N. A. KING, Breckenridge, Mich.

WANTED.—To exchange eggs for hatching, for thin foundation, or all-in-one-piece sections. My stock of Light Brahmas, White P. Rocks, and Golden Wyandottes, are as good as the best. 5tfdb
D. F. LASHIER, Hooper, Broome Co., N. Y.

WANTED.—To exchange lots in Fort Worth, Tex.; 58 trains pass daily, for bees in Dovetailed hives or comb foundation, or any thing pertaining to an apiary. G. B. ROUTZAHN,
5d Menallen, Adams Co., Pa.

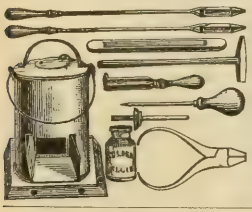
WANTED.—To exchange a strictly reliable incubator and brooder for Barnes foot-power saw, or to correspond with parties in need of incubators. Address ED. W. COLE, Manufacturer of the "Triumph" Incubators and Brooders, Kenton, O.

UPON our 250 acres of Nursery we have every class of Trees and Plants that is hardy in a northern climate; Fruit, Ornamental, Nut and Flowering. In our catalogues which are the most complete and elaborate published by any Nursery establishment in the world, all are accurately described and offered at one-half the price of tree agents.

Lovett's Guide to Fruit Culture tells all about fruits, their merits and defects, how to plant, prune, cultivate, describes the best novelties, etc. Richly illustrated, several colored plates. Price, 10 cts.

Lovett's Manual of Ornamental Trees and Plants is authoritative as well as instructive. A model of excellence in printing and illustration. Price, with colored plates 15c. We successfully ship to all parts of the earth.

J. T. LOVETT CO., Little Silver, New Jersey.



OATMAN'S SOLDERING AND REPAIR KIT

Consists of fire-pot, soldering-irons, solder, and soldering-fluid, with tools compl'te as shown in cut, with directions for soldering different metals, and how to keep your soldering-irons in shape. Whole kit, boxed, 12 lbs. Shipped on receipt of $2.00. Agents wanted.

O. & L. OATMAN, 8-7db **Medina, Ohio.**

300—FLORIDA
LEATHER-BACK ITALIAN QUEENS.

By my special method of harvesting a crop, in the "*migratory*" system, I shall have 300 *tested* queens for delivery about March 20th. $10 per dozen. *None are over 6 months old.* My crop the past season from one yard of 42 colonies, spring count, was 10,800 lbs., and increase to 150 **A. F. BROWN,**
1-6db **HUNTINGTON, PUTNAM CO., FLA.**

TAKE NOTICE!

BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH,
14tfdb New London, Wis.

Please mention this paper.

BUFFALO, N. Y. Unsurpassed Honey Market. BATTERSON & CO. Responsible, Reliable, Commission Merchants. 18tfdb **and Prompt.**

Root's Goods AT ROOT'S PRICES can be had at Des Moines, Iowa. Address Jos. Nysewander.

"Quigley's Golden Queens"

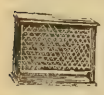
are bred for business; try one. Circular of Queens and Bee Supplies ready Feb. 1st. Send for it, and a free sample copy of the

PROGRESSIVE BEE-KEEPER.

Address **E. F. QUIGLEY,**
2tfdb **Unionville, Mo.**

Please mention this paper.

PATENT WIRED COMB FOUNDATION
HAS NO SAG IN BROOD-FRAMES.
THIN FLAT - BOTTOM FOUNDATION
Has No Fish-bone in Surplus Honey.



Being the cleanest is usually worked the quickest of any Foundation made.

J. VAN DEUSEN & SONS,
Sole Manufacturers. 5tfd
Sprout Brook, Montgomery Co., N. Y.

Please mention this paper.

OTTUMWA BEE-HIVE FACTORY.

Bee-keepers, look to your interests. Every thing in the line of bee-supplies constantly on hand. Price list free. **GREGORY BROS. & SON,**
1-23o Ottumwa, Ia. South side.

Please mention this paper.

4 H. P. Engine 6 H. P. Boiler

For sale cheap if wanted at once.
D. S. HALL, South Cabot, Vt.

BEE-KEEPERS' SUPPLIES. Before placing your order for supplies send for our illustrated catalog. We are making the best goods at lowest prices.

E. H. TRUMPER, Bankers, Mich.

Read what J. I. PARENT, of CHARLTON, N. Y., says—"We cut with one of your Combined Machines last winter 50 chaff hives with 7-inch cap, 100 honey-racks, 500 broad frames, 2,000 honey-boxes, and a great deal of other work. This winter we have doubled the amount of bee-hives, etc., to make, and we expect to do it all with this saw. It will do all you say it will." Catalogue and Price List free. Address W. F. & JOHN BARNES, 545 Ruby St., Rockford, Ill.

When more convenient, orders for Barnes' Foot-Power Machinery may be sent to me. A. I. ROOT.
23tfd

HONEY ALMANAC AND BEE BOOKS, OF ALL KINDS, A LARGE STOCK.

MY NEW ILLUSTRATED Catalogue and Price List of Supplies for the Apiary will be sent free to all who may apply Send a postal card for it, writing your name and address plainly. For every Order of $10.00 and over, I will make you a present. The Catalogue tells you all about it.

T. G. Newman, 147 So. Western Ave., **Chicago.**

SEND YOUR NAME and receive my price list of Queens, Nuclei, and Colonies. Address S. D. McLean, Columbia, Tenn.

BEE-HIVES AND SUPPLIES.

Send for catalogue free. Address **SAMUEL JONES,** Highland Park College, Des Moines, Iowa. 1-19db

Bee-Hives.

Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue. 23-22db

W. H. PUTNAM, River Falls, Pierce Co., Wis.

DO YOU KNOW

That W. H. Bright is selling bee-hives and fixtures at a bargain? If not write for price list.

6-11db *W. H. BRIGHT, MAZEPPA, MINN.*

HUNT'S FOUNDATION FACTORY.

Send for **Free Samples** of the **Finest Foundation** and **Sections** made. Special prices and advantages to dealers in Foundation. Send for my new illustrated **Free Price List** of every thing needed in the apiary. M. H. HUNT, Bell Branch, Mich.

2tfdb Please mention this paper.

BEES QUEENS
SMOKERS, SECTIONS, COMB FOUNDATION
And all Apiarian Supplies cheap. Send for Catalogue.
E. T. Flanagan, Belleville, Ill.

FOR SALE. About 1700 lbs. of pecan nuts. Samples sent to any one making an offer.

2-7db R. A. JANSEN, Wharton, Tex.

FOR SALE 250 COLONIES FINE ITALIAN BEES
IN DOVETAILED HIVES, $4.00 EACH.

Lots of 20 or more, special prices on application.

2-7db *MRS. PAUL B. LEEDS, AVERY P. O., LA.*

Climax BERRY CRATES and BASKETS. Indorsed by all leading berry growers as The BEST. Also Gift Packages, Grape, Peach and other Baskets. Prices low. Illus. Catalogue Free.
DISBROW MFG. CO., ROCHESTER, N.Y

Please mention this paper. 4-9db

AUTOMATIC COMB FOUNDATION MILLS. | **Made by W. C. PELHAM, Maysville, - Ky.**

Please mention GLEANINGS. 3 7db

Spray your Fruit Trees and Vines

Wormy Fruit and Leaf Blight of Apples, Pears, Cherries and Plums prevented; also Grape and Potato Rot—by spraying with **Stahl's** Double Acting Excelsior Spraying Outfits. Best in the market. Thousands in use. Catalogue, describing all insects injurious to fruit, mailed Free. Address

WM. STAHL, QUINCY, ILL.

LIVINGSTON'S
BUCKEYE STATE.

THE LARGEST SMOOTH TOMATO IN THE WORLD.

Rich colored fruit in immense clusters, quality "A 1;" merits fully tested; eclipses all. *Try it.* Pkt. 20c; 3 for 50c; 7, $1.

A NEW BOOK.
LIVINGSTON AND THE TOMATO.

The author's history of experiences in discovering new kinds, with practical instructions to growers. See our beautiful Seed Annual. *Free* on application. *LIVINGSTON'S SONS, BOX 273, COLUMBUS, OHIO.*

In responding to this advertisement mention GLEANINGS.

---

20 ROOT'S DOVETAILED HIVES,

All complete, and nailed up, with section-holders, and brood-frames, at **90c** each.

20 Root's 1½-story chaff hive, all complete, at **$1.25** each.

20 Chaff hives with movable side and case of 6 section-holders, 9 brood-frames, all nailed, at **$1.50** each.

50 colonies of bees in 10 and 8-frame hives; 10-frame hives, **$4.00** each; 8-frame hives, **$2.50** each. Bees are in good condition, and hives are all new. Must be sold. 20-page price list free.

J. M. KINZIE, ROCHESTER, OAKLAND CO., MICH.

In responding to this advertisement mention GLEANINGS.

Texas Headquarters For Apiarian Supplies.

Italian Bees and Queens. Root's Dov. hive a specialty. Foundation, made on shares or exchanged for beeswax. **W. O. VICTOR, Wharton, Tex.**

Please mention this paper. 5-10db

Don't Forget

to send for our 1893 circular. Dovetailed hives, Sections, Bee Supplies, etc. *J. NEBEL & SON, HIGH HILL, MO.*

2tfdb

Interesting Monthly for
The Family and Fireside
Welcome in every Home.

Large Premiums for Clubs.
Sample Copy sent Free.

THOMAS G. NEWMAN, 147 South Western Ave., **CHICAGO, - - ILLS.**

THE WHITE PEARL CUCUMBER is a great acquisition as well as a novelty. For full particulars and seed send 25 cents to

6tfdb THOMAS GEDYE, Dayton, La Salle Co., Ill.

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CONVENTION NOTICES

The semi-annual meeting of the Utah Bee-keepers' Association will be held in Salt Lake City, Utah, April 10, 11, 1893. All interested are invited. R. T. RHEES, Sec.

The members of the old Southern Illinois Bee-keepers' Association, and those interested in apiculture, are requested to correspond or meet in DuQuoin, Ill. on Sat., Apr. 1st, 1893, for the purpose of reorganizing. F. H. KENNEDY, Sec.
DuQuoin, Ill.

The Susquehanna Co. Bee-keepers' Association will hold its next meeting at the Tarbell House, Montrose, on Thurs., May 4, 1893. All are invited. H. M. SEELEY, Sec.
Harford, Pa.

The Texas State Bee-keepers' Association will hold its 15th annual session at Greenville, on Wednesday and Thursday, April 5 and 6, one mile north of the court-house, at the apiary of Mrs. Jennie Atchley. All are invited. No hotel bills to pay.
A. H. JONES Sec., Golden, Texas.

The following bee-keepers, viz., Mr. and Mrs. W. O. Victor, Messrs. R. A. Jansen, R. A Armstrong, Jr., and H. J. Moses, of Wharton; and Messrs. J. H. Mullin & Son, of Oakland and Eagle Lake Texas, met at the apiary of Mr. W. O. Victor, in the town of Wharton, Feb. 25, 1893, and, after a temporary meeting, with Mr. R. A. Jansen acting as chairman, and T. H. Mullin secretary, permanently organized the South Texas Bee-keepers' Association. W O. Victor was elected president, and T. H. Mullin secretary. The object of this organization is to further the interests of bee-keepers, and to discuss "beeology" for the advancement and benefit of bee-keepers. Members present represented 508 colonies of bees, spring count; 35,000 lbs. of honey, and 300 lbs. of wax, last crop. Prospects were discussed as to an average crop of honey this year, and decided good. An amount sufficient was furnished the secretary for stationery, with instructions to invite all bee-keepers of this section to join us. Many subjects were discussed pertaining to the bee and the many ways of working them to the best advantage. A bottle of "pure honey" (so called), purchased in Houston, Tex., and prepared by Geo. K. McMeachan & Sons, Wheeling, W. Va., was presented to the association by the president, and was examined and passed upon as being minus any honey taste whatever. It was decided to send a sample of said honey to A. I. Root, for further investigation. The secretary was instructed to furnish copies of the proceedings of this meeting to GLEANINGS IN BEE CULTURE and American Bee Journal for publication The association meets May 18th and 19th, 1893, at the apiary of W O. Victor, Wharton, Texas. All bee-keepers are respectfully invited to attend.
T. H. MULLIN, Sec. W. O. VICTOR, Pres.

Wants or Exchange Department.

Notices will be inserted under this head at one-half our usual rates. All advertisements intended for this department must not exceed five lines, and you must say you want your adv't in this department, or we will not be responsible for errors. You can have the notice as many lines as you please, but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices of fering articles for sale, can not be inserted under this head For such our regular rates of 20 cts. a line will be charged, and they will be put with the regular advertisements We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange poultry electrotypes or printing, for bees or supplies.
L. JAQUES, Chatham Center, N. Y.

WANTED.—To exchange one Hilleron cornet (B-flat; I paid $10 cash for it second-hand), for 100 good straight worker combs "that are free from disease," in thick-top Simplicity frames. Write at once. Satisfaction guaranteed.
W. D. LARKIN, West Berlin, Mass.

WANTED.—To exchange comb foundation and Japanese buckwheat, for beeswax. 6-7d
F. N. JOHNSON, Knoxville, Knox Co., Ill. Box 137.

WANTED.—The address of some bee-keeper that has about 10 or 12 stands to sell. Write me prices and terms. Should like them as near Goodhue Co. as possible. GEO. A. FENTON,
Pine Island, Goodhue Co., Minn.

WANTED.—To exchange eggs for hatching, for thin foundation, or all-in-one-piece sections. My stock of Light Brahmas, White P. Rocks, and Golden Wyandottes, are as good as the best. 5tfdb
D. F. LASHIER, Hooper, Broome Co., N. Y.

WANTED.—To exchange a strictly reliable incubator and brooder for Barnes foot-power saw, or to correspond with parties in need of incubators. Address ED. W. COLE, Manufacturer of the "Triumph" Incubators and Brooders, Kenton, O.

WANTED.—To buy second-hand sawmill machinery. W. S. AMMON, Reading, Pa. 4-6-8d

BICYCLES! Solid and pneumatic tires, new and second-hand, want any thing with a value.
ROBERT B. GEDYE, La Salle, Ill.

WANTED.—About 20 lbs. second-hand type.
R. W. GURLEY, Hendersonville, N. C.

WANTED.—To exchange 14 fonts of type (only in use six months) for hives (dovetailed preferred), foundation, sections, or offers.
F. H. JEWHURST, Richmond, Henrico Co., Va.

WANTED.—To exchange one Winchester rifle, 32 caliber, pistol grip, set triggers; 90 improved Hoffman frames; 145 section-holders; 100 tin rabbets; 100 wood separators; one Parker foundation-fastener, for a four-frame reversible Stanley extractor in good order.
JOHN DAVIS, Garland City, Ark.

WANTED.—To exchange 2-story 8-frame tin-roof hives, with full sets of combs and queen-excluding zinc honey-boards, for books, Jersey calf, breech-loading shot-gun, Winchester rifle, revolver, or offers. 5-7d M. FRANK TABER, Salem, O.

WANTED.—An active young man of good morals, and experience in bee culture, to work in apiary. State experience, and wages wanted.
W. D. WRIGHT, Altamont, N. Y.

WANTED.—A situation, to take charge of an apiary in the spring. Have had several years' experience with bees. Prefer California, but would not object to any good locality. P. MARSH,
5-6d Big Stone Gap, Va.

WANTED.—To rent an apiary, or a position as an apiarist in California. Correspond with
CHAS. BROWN, Nicolaus, Sutter Co., Cal.

WANTED.—To exchange a lot of Simplicity beehives, eight and ten frame, complete, for guitar, Indian game chickens, or offers.
5-6 J. C. PROVINS, Masontown, Pa.

WANTED.—To exchange frames of comb with some honey in, for bees, frames wired. Want bees in May or June. Make me offers.
CHARLES E. HARDESTY,
Connotton, Harrison Co., Ohio.

WANTED.—To exchange pure-bred Dorking chicks and fine pedigree shepherd pups, for Italian bees, or offers. WYNN SMITH,
Lock Box 235, Aurora, Ill.

WANTED.—To exchange a new foot-power saw fo rhoney. The honey to be delivered next fall.
W. S. WRIGHT, Battle Creek, Mich.

WANTED.—By young man a position in an apiary. Experienced. Address
E. C. GREEN, Wayne, Mich. Box 305.

A Four-Color Label for Only 75 Cts. Per Thousand.

Just think of it! we can furnish you a very neat *four-color* label, with your name and address, with the choice of having either "comb" or "extracted" before the word "honey," for only 75 cts. per thousand; 50 cts. per 500, or 30 cts. for 250, postpaid. The size of the label is 2¼x1 inch—just right to go round the neck of a bottle, to put on a section, or to adorn the front of a honey-tumbler. Send for our special label catalogue for samples of this and many other pretty designs in label work.

A. I. ROOT, Medina, O.

HONEY COLUMN.

CITY MARKETS.

CLEVELAND.—*Honey.*—There is no change since last report. We are offered honey about ½ cent cheaper than two weeks ago No. 1 fancy white.
WILLIAMS BROS.,
March 8. 80 & 82 Broadway, Cleveland, O.

KANSAS CITY.—*Honey.*—Demand for comb honey is good. Price of 1-lb. comb, 16@17; dark, 12@14; extracted, 6@8. There is no beeswax on the market. The stock of comb and extracted honey on our market is very light. HAMBLIN & BEARSS,
March 9. 514 Walnut St., Kansas City, Mo.

ST. LOUIS.—*Honey.*—There is no change in the honey market, except a very urgent demand for extracted of high grade in barrels. We quote: Comb, 10@17; extracted, 5½@6½. *Beeswax*, prime, 26½. D. G. TUTT GRO. CO.,
March 11. St. Louis, Mo.

KANSAS CITY.—*Honey.*—The demand for extracted is good; the supply, light. Demand for comb, fair; supply, fair. We quote white 1-lb. comb, 16@17; amber, 12@15; extracted, 6@8. *Beeswax*, 22@25
CLEMONS-MASON COM. CO.,
March 9. Kansas City, Mo.

BUFFALO.—*Honey.*—Our market is mostly cleaned up on all grades of honey. Fancy white stock is in good demand, and firm at 17@18, second grade ranging from 14 to 15. Buckwheat, mostly 9@10. *Beeswax*, 28@30. BATTERSON & CO.,
March 8. 167, 169 Scott St., Buffalo, N. Y.

BOSTON.—*Honey.*—Honey is moving fairly well, with a prospect of every thing being sold out; but it was necessary to make lower prices in order to accomplish this. We are selling best white 1-lb. combs at 15@16. Extracted, 9@10. No beeswax on hand. BLAKE & RIPLEY,
March 9. Boston, Mass.

MINNEAPOLIS.—*Honey.*—The arrivals have been light of late, and good white stock is held firm under good demand. Dark honey, of which there is considerable, is slow. We quote: Fine white clover, 16@17; 2-lb. combs, 15@16; buckwheat, 13@14; extracted, 10@11. J. A. SHEA & CO.,
14 & 16 Hennepin Ave., Minneapolis, Minn.
March 11.

CHICAGO.—*Honey.*—The demand is in excess of supply, for best grades of white comb honey, selling at 17@18. Good to fair white comb, 15@16; dark, slow. All kinds of extracted honey sell well at unchanged prices. R. A. BURNETT & CO.,
March 8. 161 So. Water St., Chicago, Ill.

CINCINNATI.—*Honey.*—There is a fair demand for extracted honey at 6@8c on arrival. There is no choice comb honey on our market. Prices are nominal at 14@16 for best white. *Beeswax* is in good demand at 24@27 for good to choice yellow on arrival. CHAS. F. MUTH & SON,
March 9. Cincinnati, O.

DETROIT.—*Honey.*—Comb honey continues to be quoted at 13@15; not much in sight. Extracted, 7½@8½. *Beeswax*, 26@27. M. H. HUNT.
March 9. Bell Branch, Mich.

TILE ✠ DRAINAGE.

BY W. I. CHAMBERLAIN, A. M., LL. D.,

Formerly Secretary of the Ohio State Board of Agriculture, and late President of the Iowa State Agricultural College. At present Associate Editor of the Ohio Farmer.

This is a valuable companion to our other rural books. It embraces the experience of forty years of one of our foremost practical agriculturists, who has laid with his own hands over 15 miles of tile.

Price 35c; by mail, 40c.

A. I. ROOT, MEDINA, OHIO.

Muth's Honey

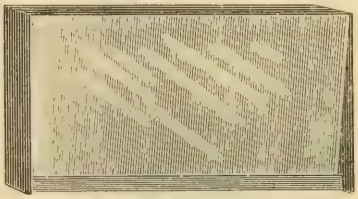
In packages of ¼, ½, 1, and 5 lbs.,

25c. per lb.

If sent by mail, add 17c for every lb.

C. F. Muth & Son,
976-978 Centr. Ave.,
CINCINNATI, OHIO.

Caramels.



BEE=FEEDER.

Positively the best entrance bee-feeder ever made. No robbers can get at it, and it can be used where any other feeder can. When once tried no other will be used. Capacity, one quart. It is made from the best tin, and with proper care will last a lifetime. Price each, 20c; 2, 35c; 6, 80c; by mail, 8c extra. Large discount to dealers. Manufactured and sold by *W. D. SOPER, Jackson, Mich., and A. I. ROOT, Medina, O.*

On Sale at Half Price.

Every thing necessary to run an apiary of one hundred colonies. Outfit in good condition. Will be found as represented. Address

MILTON CONE,
6-7d **1213 VIRGINIA AVE., KANSAS CITY, MO.**

A NEW BOOK ON Tomato Culture, Plant Growing, AND High Pressure Gardening in General.

Price 35c; By Mail, 40c.

To get your tomatoes started, more or less gardening under glass must be done, as you are probably well aware. Well, when you can manage the tomato under glass, you are ready to manage almost any other vegetable crop; therefore we regard the tomato book as one of the most valuable if not *the* most valuable of any work on raising plants and vegetables that require protection from the frost; and whether the protection is to be in the fall of the year, or the middle of the winter, or in the spring months, you will find the tomato book full of the latest and most modern appliances for giving protection at the smallest expense. Of course, a part of it has already appeared in GLEANINGS; but probably considerably more than half will be found new to our readers.

A. I. ROOT, Medina, O.

Improved Force and Spray Pumps.

Fig. 1.

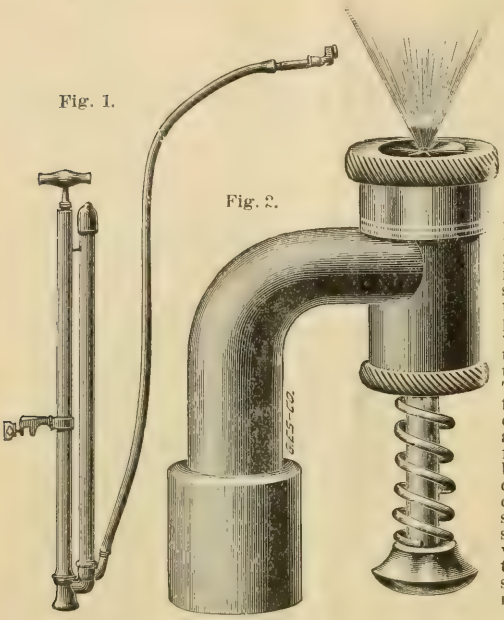


Fig. 2.

Something superior to those formerly offered, at Greatly Reduced Prices.

It is generally admitted, that, excepting in very rare cases, it is impossible to have perfect fruit or foliage in these days, nor any at all worth mentioning, unless the trees are watched, and the insect-enemies that make all the mischief are destroyed at just the right time. That time is very near at hand; and the prudent man, unless he is already provided with the most approved apparatus for destroying the insect-pests is on the lookout, and preparing to secure it. There are a great many spraying-outfits of various kinds sold, varying in cost and efficiency. Some are good, and others not so good. We have carefully examined different outfits, and we believe the line we offer here is the best obtainable for the price. These, of course, are not large enough for fruit specialists who have many acres to spray; but for the ordinary grower who wants something effective, and within the reach of his pocket-book, nothing superior can be found for anywhere near the price at which we sell these.

Myers Bucket Brass Spray-Pump.

This is the one we offered first last season, but greatly improved. Fig. 1 shows the general appearance of the pump, which is made almost entirely of brass, with rubber-ball valves, and 4 feet of ½-inch rubber hose. Fig. 2 shows the vermorel spray nozzle, with degorger, which is new on the pump this year. This degorger is used to remove an obstruction that may get into the small hole which forms the spray, thus making it unnecessary to unscrew the tip except in rare cases. Two tips are furnished with each pump, one for very fine spray and the other some coarser, but very much finer than a spray made with a perforated nozzle. It is so fine that it floats up like a cloud. By this feature the same amount of liquid will go at least four times as far, and does more effective work than with a perforated spray nozzle. The pump differs in construction from the old-line pumps of this class, and is arranged so that the heavy work is done on the down stroke of the plunger and nothing on the up. The effect of this operation, while pumping, is to hold the pump down, and it is not necessary to use a foot-rest. Thus it is very easy to operate, and has extraordinary power. It is provided with a large air-chamber, and has a valve at the bottom between the cylinder and the air-chamber, whereby the pressure is held uniformly in the air-chamber and on the hose, so that the nozzle throws a constant, continuous, even spray all the time, and is not affected by the movements of the plunger, and the operator is enabled to keep a constant pressure on the nozzle of from 50 to 100 lbs. with very ordinary exertion. It is arranged

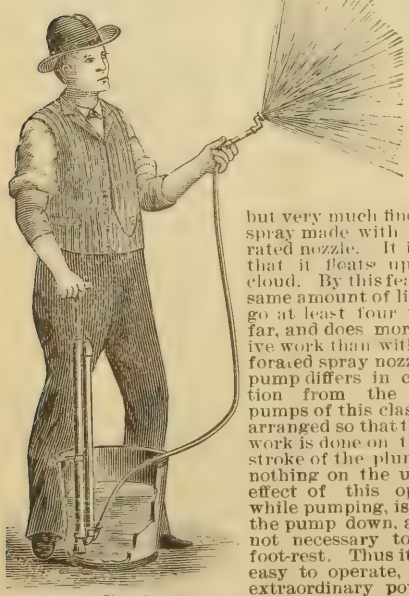
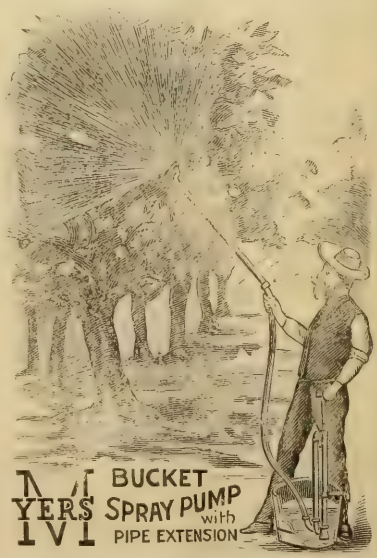


Fig. 3.



Figs. 4 and 5.

so it discharges a fine jet in the bottom of the bucket, to keep the solution thoroughly mixed and agitated —a feature peculiar to this pump. By simply unscrewing the spray nozzle the pump is ready to throw a stream which is very effective in washing buggies, windows, putting out fires, or arresting swarms of bees.

Fig. 3 shows the method of operating. In this way you can not throw a spray more than 15 feet high, so that, on high trees, you can not do effective work without the pipe extension shown in Figs. 4 and 5. By means of this you are enabled to reach all parts of the tree easily. This pipe extension is simply a piece of common ¼-in. gas-pipe, 8 feet long, with coupling, which you may be able to get at your hardware store. If not, we can furnish it for 50 cts. The pump complete, with hose and vermorel nozzle, as shown in Figs. 1 and 2, with two tips, weighs 5 lbs., and will be furnished for $4.50 net each. Eight-foot pipe extension included for $5.00. We will sell 3 pumps, without pipe extension, for $10.50; 6 for $20.00. Pipe extension, in quantities of 3 or more, at 40c each. We can mail this pump in two packages for 90c postage.

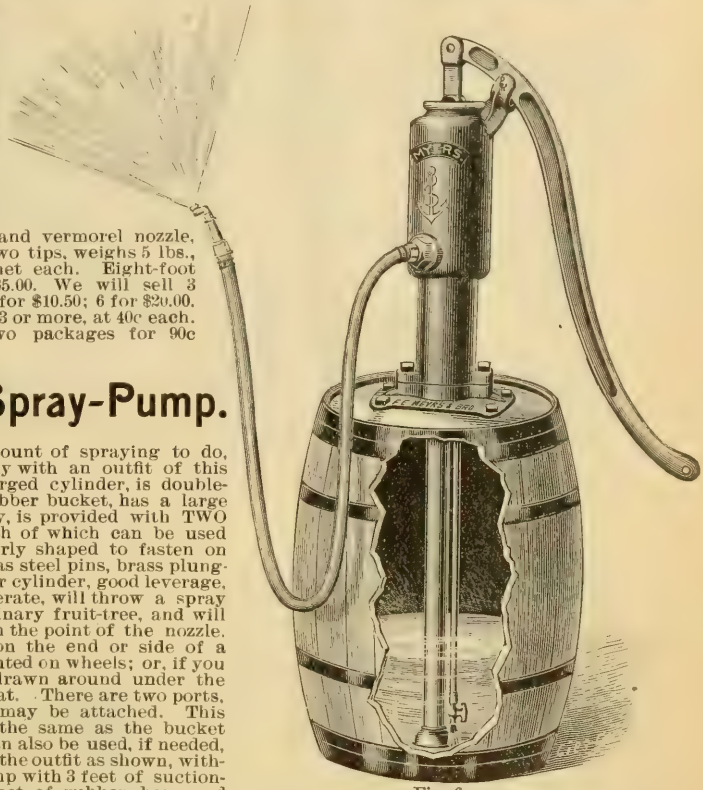


Fig. 6.

Myers Barrel Spray-Pump.

Where you have a larger amount of spraying to do, you can accomplish it more easily with an outfit of this kind. It has our patent submerged cylinder, is double-acting, has patent expansion rubber bucket, has a large air-chamber to cushion the spray, is provided with TWO DISCHARGE PORTS, one or both of which can be used for spraying. The base is properly shaped to fasten on the staves or head of a barrel, has steel pins, brass plunger cylinder, and brass-lined lower cylinder, good leverage, is very powerful, and easy to operate, will throw a spray as fine as mist over any ordinary fruit-tree, and will throw a solid stream 60 feet from the point of the nozzle.

This can be mounted either on the end or side of a barrel. The barrel may be mounted on wheels; or, if you have a horse to spare, it can be drawn around under the trees in a wagon or on a stoneboat. There are two ports, to one or both of which a hose may be attached. This outfit includes vermorel nozzle, the same as the bucket pump, and the pipe extension can also be used, if needed, for high trees. We can furnish the outfit as shown, without the barrel, consisting of pump with 3 feet of suction-pipe, strainer, and agitator, 5 feet of rubber hose and vemorel nozzle, with two extra tips, for $6.50; or the same with two 5-foot lengths of hose and two nozzles, for $7.50; 8-foot extension, at 50c extra. We have extra spray nozzles without the degorger, and with attachments to fit ordinary ¾-inch garden hose, at 60c each; by mail, 75c.

In this connection we would call attention to the Whitman and Smith pumps listed on page 12 of our catalogue, either of which we can furnish at prices listed there. The Smith pump especially is well adapted for spraying. It is strong and serviceable for a tin pump, and we sell a good many of them. To save you looking it up we quote the prices here. Each, $1.00; 2 for $1.80; 3 for $2.00; 1 doz.; $8.00; 2 doz., $15.00; 50 for $29.00, or 100 for $55.00 net cash. While it is strong and serviceable, we do not like the principles on which it works as well as the

Common Sense Spray-Pump.

The adjoining cut shows its construction and manner of working. The piston, or plunger, is worked with a lever handle, giving greater force for the same power exerted. The plunger-tube is shorter, and larger in diameter, than the ordinary pump. If the water comes over the top it spills right into the pail again. It has an air-chamber, with valve, giving a continuous stream or spray. It has a short rubber hose to give direction to the stream or spray, without moving the pump. It has also an adjustable nozzle for stream or spray. We offered this pump for the first time last season, and they gave general satisfaction. Their only fault is they are not made very strong, but if judiciously handled will do good work for a long time. We are able to offer them this year for only 60c each, or $1.00 postpaid. In quantities the price will be $6.00 per doz.; 3 doz. for $16.00. Larger quantities quoted on application.

Gould's Handy Knapsack Spray-Pump.

There may be some who will prefer a knapsack spray-pump that may be carried on the back. We are prepared to furnish one of the best of this kind—Gould's Handy Knapsack Spray-pump. The pump is made entirely of brass and copper, with rubber-ball valves and metal plunger. The reservoir is made of heavy copper, and will hold about 5 gals. of liquid. We furnish each pump with 3½ ft. of ⅜-inch discharge hose, and "Masson" Lance nozzle. Price of Handy Knapsack Sprayer complete, $13.50.

A. I. ROOT, MEDINA, OHIO.

The Review

for March has an illustratted article by R. L. Taylor showing how to put foundation in sections by means of the hot-iron-melted-edge of-the-foundation plan with the greatest despatch and most substantial manner. He also gives some most excellent advice for the care of bees in spring. B. Taylor shows how by a slight modification of hives and a little manipulation the bees of two queens can be made to work in one super and swarming be prevented. "Self-hivers" is the special topic, and their advantages and shortcomings are well brought out. R. L. Taylor tells in detail how the queen-trap may be made to take the place of the self-hiver—yes, even surpass it. Hasty gives his unique review of the bee journals. Besides, there are the usual selections, editorials, and contributions upon various topics. Send ten cents for this number, and with it will be sent two other copies of late but different issues; or for $1.00 the REVIEW will be sent from Jan. to the end of the year. The 50-cent book, "Advanced Bee Culture," and the REVIEW one year, for $1.25.

W. Z. HUTCHINSON, Flint, Michigan.

BEES AND HONEY

By Thos. G. Newman, ex-editor of the American Bee Journal,

Is a book of over 200 pages, that we send **FREE to every new Subscriber** who mails us $1.00 for a year's subscription to the old

AMERICAN BEE JOURNAL,

The Largest, Best, Cheapest, and only **weekly** bee-paper in all America. 32 pages; established 1861. Send for a **free sample copy** with description of book offer GEO. W. YORK & CO., **56 Fifth Avenue, - - CHICAGO, ILLS.**

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Great Reduction.

Sections at greatly reduced prices. Hives, Shipping - cases, etc., at Bed-Rock Prices. Write for free Illustrated Catalogue and Price List.

G. B. Lewis Co.,
Watertown, = = = Wis.

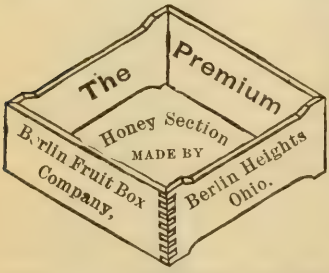
1tfdb Please mention this paper

PRICE $2.
(POSTPAID).

Ladies' Fine Shoes, Genuine Kid, Soft Soles; Style, Fit, and Wear Equal to $3 Shoes. High or Low Heel; Broad or Narrow Toe: Sizes 1 to 7. C D E or E E Widths. Send your size. Sure Fit. Patent tips, same price.

C. L. Griesinger
Medina, O.

Send P. O. order, Registered Letter, or Postal Note.



BEE SUPPLIES and all kinds of Berry-packages, boxes, and baskets. We make a specialty of one-piece sections and wood separators. Address BERLIN FRUIT BOX CO., Berlin Heights Erie Co., Ohio.

3-10db Please mention GLEANINGS.

Closing-out Sale of Supplies

AT 25 Per Cent Discount.

As I find the management of five apiaries, run for bees, queens, and honey, enough care for one man, I have decided to close out my Supply business, and sell the surplus stock I have on hand at 25 per cent discount. If you want bee supplies of any kind, here's a chance. See my price list of Italian bees, queens, and supplies.

OLIVER FOSTER,
6tfdb **Mt. Vernon, Linn Co., Iowa.**

EGGS, $1.00 PER 13.

White P. Rocks, and White Wyandottes. A few fine Wyandotte cockerels for sale at $1.50 each.

6-9db **W. J. YOUNG, Scotch Ridge, Ohio.**

Have you Seen our Big Blue Cat=alogue for **1893**? **Seventy** illustrated pages. Sent **Free** to any bee-keeper. **BEE-SUPPLIES** at retail and wholesale. **Everything** used in the apiary. Greatest variety and **Largest** stock in the West. 2-12db

E. Kretchmer, Red Oak, Iowa.

In writing advertisers please mention this paper.

He Is Dead

to his own interests who does not use **PORTER BEE-ESCAPES.** Why not wake up and give them a trial, at least? *Then, if not satisfied, return them and get your money back.* They are used and praised by prominent bee-keepers everywhere.

PROF. COOK says: "No bee-keeper can afford to be without them."
CHAS. DADANT & SON say: "We intend to use them in all of our apiaries hereafter."
JAS. A. GREEN says: "Your escape is undoubtedly the best one made."
GILBERT BROS., East Avon, N. Y., write: "We would not be without them for $5.00 each."

Prices: Each, by mail, postpaid, with directions, 20c; per doz., $2.25. Send for descriptive circular.

R. & E. C. PORTER, Lewistown, Ill.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
PUBLISHED BY A. I. ROOT
$1.00 PER YEAR MEDINA OHIO

Vol. XXI. MAR. 15, 1893. No. 6.

STRAY STRAWS

FROM DR. C. C. MILLER.

A THIRD CASE has been reported in *Centralblatt*, of a queen having been fecundated in the hive.

A FIRM IN GERMANY consumes yearly about 40,000 lbs. of ceresin for foundation.—*Centralblatt*.

MORE DEATHS occur in a day now than in a week at the beginning of winter. I mean in the hives.

THE HAYCK sectional hive is described in *A. B. J.* by W. J. Cullinan, with straw walls 1½ inches thick.

"PAUPER SWARMS" is what they call "hunger swarms" in the South,—those which swarm out for want of stores.

IF THOSE CARAMELS made by Muth & Son get to be well known, there will be a bigger market for honey in Cincinnati.

FRANK MCNAY'S report, p. 173, would seem a little fishy if I knew nothing about the man. But Frank isn't a fishy sort of man.

MY BEES do just as W. Halley says on p. 173. If it's cold enough they'll stay above the bee-escape. In that respect the Larrabee escape has an advantage.

"WINTER LINGERS in the lap of Spring" sometimes. This time Winter seems to have pushed Spring off on to the floor, and sat down in the chair himself.

MY, OH! but doesn't Hasty just come down savage on the Washington system of grading! If I had backbone enough I think I'd stand up in a straight row beside him.

ISN'T THERE DANGER some one will choke trying to swallow that story on p. 178? I mean where the bees "sot" the fruit in one corner of a garden and failed in t'other.

"IN SUNNY SOUTHLAND" is the happy title of Mrs. Jennie Atchley's Southern department in *A. B. J.*, in which she is now giving some sound instruction to an A B C class.

DIDN'T YOU make a mistake on page 192, and get the wrong picture? That looks just like the original Miller feeder, only it has wire cloth on it, and Manum's name under it.

THE GENERAL TEACHING—and I suppose it's right—is to see that a good share of young bees are in a newly formed colony. Yet the largest surplus of extracted I ever got was from a colony started with no young bees. I merely set a hive of empty combs, no bees, in place of a removed colony, and put in a queen.

KEEP CELLARS cold enough and you'll not be troubled with dead bees on the floor. They'll just die in the hive, queen and all, and stay there, leaving the cellar bottom clean and nice.

THAT PLAN to get rid of laying workers, on p. 178, is a long way behind the plan I use, if my plan works as well with others as with me. Just drop in the hive a "pulled" queen. That's all.

O Rambler! you old bach,
With quail on toast galore;
I'd greatly joy to snatch
A few from out your store.

But then, I'm not a hog,
To eat them all alone;
Nor yet a snarling dog,
A gnawing at a bone.

But rather would I live
With some sweet "surup" neat,
Who dainty touch could give,
And then could help me eat.

WHEN I READ some of the stuff that is printed in papers that are not bee-papers, under the head of apicultural literature, I feel exceedingly thankful to the editors of our bee journals for what they *don't print*.

SEALED COVERS get a black eye from Geo. S. Wheeler, in *A. B. J.* Colonies under them in bad condition, with several dead, while those with cushions are all right. Ought there not to be cushions over the sealed covers?

H. REEPEN, in the German *Centralblatt*, gives the fullest *resume* that I know about, of the noticeable items of bee literature in both home and foreign journals. He mixes in with it enough Reepen to make it very readable.

A HONEY-BEE CONCERT is recommended by F. A. Gemmell, in *C. B. J.*, consisting of music, interspersed with short lectures on bees, honey, etc. He thinks such a scheme, in connection with conventions, would help the honey-market.

BEES ARE CHEAPER than I supposed. Averaging replies of veterans in *A. B. J.*, a colony in box hive is worth $2.19 in fall, and $3.21 in spring. Highest price given is in Nebraska, $5 to $8 in spring; lowest in Massachusetts, $0.00 in fall.

BEE-LICE, for some reason, don't seem to thrive in this country. Elsewhere they seem troublesome, if not dangerous, one German bee-keeper reporting that, on one day, he removed more than 40 lice from a queen, and the next day more than 30.

J. E. POND reports in *A. B. J.*, that, in his locality, bees are worth "nothing in the fall, and $2.00 in spring." Wouldn't it be a good scheme to buy up 1000 colonies at the regular

price in fall, cellar them, and sell in spring? If even half die, $1000 wouldn't be such bad pay for hauling and wintering.

Is the smell in your cellar all right? If it isn't, make it right. Get the bad air out and good air in, somehow. Fire is a great sweetener. Even when the cellar's too warm, a fire to change the air will leave the bees quieter as soon as it cools off.

I don't like Hasty's review in *Review*—at least, not entirely. To begin with, the type in the headings is too lean and lank—looks as if if needed to be fed up. In the next place—well, in the next place every thing else is all right, A 1, tip-top, just as I expected.

Smokers, heretofore, have either had the cut-off, or else sucked smoke into the bellows. The *Review* illustrates Daggit's smoker with a double bellows, like a blacksmith's, that throws a continuous stream with no suck-back. Why didn't some one think of that before?

The thermometer went up to 45° Feb. 27, the highest for many weeks. If bees had been out I think they would have flown a little, the first time since the beginning of November, and there was no really good flight after the last week of October. But Feb. 28 it was down again to 11°.

LANGSTROTH'S REMINISCENCES.

GETTING THE MOVABLE FRAME INTRODUCED; INVENTION OF THE HONEY-EXTRACTOR, ETC.

In the spring of 1852, having disposed of the good will of my school for young ladies, I gave my whole attention to my apiary in West Philadelphia. It was there that I gained the practical experience in the management of movable-frame hives which prepared me for writing my first work on bees. Before the close of that season I was so completely prostrated by an unusually severe attack of my old head trouble that I was not only unable to give any personal attention to the bees, but could not even give the necessary instructions to my assistant. This compelled me to sell my bees, and abandon the business for a season. As I glance back over the past years, how often can I recall similar experiences, when, in the heat of the race, and sometimes with the goal of success apparently almost gained, I have sunk down on the course, unable to take another forward step! I write these words with no disposition to murmur against any of God's providential dealings with me. I know that the Judge of all the earth can not but do what is right. I look forward to the time when all his dealings with us shall be made plain, and desire humbly and lovingly to use the words of the dear Savior, "Even so, Father, for so it seemed good in thy sight."

The patent on my hive was issued Oct. 5, 1852. I then decided to leave my wife and our two daughters in Philadelphia, the daughters to attend a young ladies' school in which my wife had accepted the position of assistant teacher, while I made my residence in the family of my brother-in-law, Mr. Almon Brainard, of Greenfield, Mass.

When I parted from my beloved wife, in November, 1852, the future was mercifully hidden from me. I was to have no settled home for nearly six years, and for more than three-fourths of that time I was to be separated from my dear ones! I had recovered from my head trouble, and at once began to write my book on bees. The larger part of the manuscript was sent, as fast as written, to my wife, to be copied into a legible hand for the printers; for in the ardor of composition I wrote a scrawl which only she and I could decipher.

With the pecuniary aid of my kind brother-in-law, the sheets of a small edition of this book were printed in Greenfield; and in the spring of 1853, "Langstroth on the Hive and Honey-bee" was published by Hopkins, Bridgman & Co., of Northampton, Mass. What the wife of Huber was to him in his blindness, my dear wife was to me. Without her labors, out of school hours, that winter, it would have been impossible for me to prepare my work for the press. Never once did she even intimate that she was overtasked, and all her letters breathed such an unselfish spirit as can be attained by only the loftiest and purest characters. I shall say no more, at this time, of this beloved companion, than to put on record the fact that, in our married life of over thirty-six years, I can not recall a single experience in which I knew her to seek her own happiness at the expense of others.

While residing in Philadelphia, although without a pastoral charge, I preached probably more than half of my Sabbaths; and when I returned to New England I supplied the pulpit of the Congregational Church in Colerain, near Greenfield, the larger part of the time till the fall of 1857. My wife and daughters spent their school vacations in July and August with me in Colerain, where our son was living very near to us, working on a farm. Oh those happy reunions! Memory still loves to dwell upon them. Each one was a bright oasis in those long separations; for such a struggle was I compelled to make to support my family, that I was seldom able to make them more than one short visit a year.

When I determined to apply for a patent, as I had neither the money nor the business qualifications needed for its profitable introduction, I thought myself fortunate in being able to secure the services of a firm which had been quite successful in selling patents; but business reverses prevented them from carrying out our agreement. While writing my book, Dr. Joseph Beals, one of my former Greenfield parishioners, offered, for an interest in the invention, to furnish means for the manufacture of the hives, and for establishing an apiary. Dr. Beals was a very able dentist, but without any experience in patent matters or in bee-keeping, while I was frequently prostrated by the old head trouble. Although much was done to introduce the movable-comb hive to the public, we met with no adequate pecuniary success; and after some years we closed up our business, without any abatement of the old friendship, the doctor having lost much time but no money by his venture.

Having given, by a quotation from my private journal, my belief of the results which would flow from the invention of movable frames, I shall now give an extract from the advertisement inserted in my book, published in May, 1853:

"L. L. LANGSTROTH'S MOVABLE-COMB HIVE, PATENTED OCT. 5, 1852.

"Each comb in this hive is attached to a separate movable frame, and in less than five minutes they may all be taken out without cutting or injuring, or at all enraging the bees. Weak stocks may be quickly strengthened by helping them to honey and maturing brood from stronger ones. Queenless colonies may be rescued from certain ruin by supplying them with the means of obtaining another queen, and the ravages of the moth effectually prevented, as, at any time, the hive may be readily examined, and all the worms, etc., removed from the combs. New colonies may be formed in less time than is usually required to hive a natural swarm; or the hive may be used as a non-

swarmer, or managed on the common swarming plan. The surplus honey may be taken from the interior of the hive on the frames, or in upper boxes or glasses, in the most convenient, beautiful, and salable forms. Colonies may be safely transferred from any other hive to this, at any season of the year from April to October, as the brood, combs, honey, and all the contents of the hive, are transferred with them, and securely fastened in the frames. That the combs can always be removed from this hive with ease and safety, and that the new system, by giving perfect control over all the combs, effects a complete revolution in practical bee-keeping, the subscriber prefers to *prove* rather than assert. Practical apiarians, and all who wish to purchase rights and hives, are invited to visit his apiary, where combs, honey, and bees will be taken from the hives; colonies which may be brought to him for that purpose, transferred from any old hive; queens, and the whole process of rearing them, constantly exhibited; new colonies formed, and all processes connected with the practical management of an apiary fully illustrated and explained. . . . "

The gist of the whole matter is found in my offering to give to all who would visit my apiary a practical demonstration that the perfect control over all the combs effects a complete revolution in practical bee-keeping. The more a man knew about bees, the easier it was to convince him that there was no exaggeration in such a claim, and this was the reason why Moses Quinby, Prof. Jared Kirtland, and men of that stamp, became such ready converts to the movable-comb system. L. L. LANGSTROTH.

Continued.

MANUM IN THE APIARY.

REDUCING STOCK AND MELTING UP COMBS; UNFINISHED SECTIONS NOT PROFITABLE, ETC.

"Good-afternoon, Henry. I think you must be very courageous to travel six miles this stormy day."

"Well, Manum, you see it did not storm like this when I started from home. But then, this storm is nothing to be compared with what you and I had to endure at times, during the war. Do you remember the time we came in from picket duty, in February, 1863, during that storm of snow and rain, driven by a strong wind? and how wet we were, and no warm house like this in which to change our wet clothes for dry ones? I well remember what you said when you were trying to pull off your wet woolen shirt in that cold dreary tent. You looked up to me, shivering and smiling, and said, 'Hen, this is a little tough on one's patriotism; but then, it must be endured for the love of union and freedom. But if I ever get out of this scrape, Hen, and get back to old Vermont, you can then mark me down as a *home* boy. Here! *do* help me off with this wet shirt.' Ha, ha, ha!"

"Yes, Henry, I well remember those dreary days of our army life; also the circumstance to which you refer, although it occurred 30 years ago. I am also reminded that time is passing very rapidly, and that you and I are not the sprightly youths that we were then. Thirty years have passed since that terrible storm we experienced on the picket line. Is it possible? and yet our gray hair is ample proof that the milestone to which you refer is all of 30 years in the rear of us; and still we are journeying on to another mile-stone, which will be appropriately numbered and added to the many we have already passed. Will it be the last? I sincerely hope, however, that Henry B. Isham will be spared to pass many more bright and shining mile-stones ere he is called to the grea tribunal."

"Thank you, Manum, for your good wishes. What are you doing, now that the bees are quiet and nothing to do among them?"

"Well, Henry, I am doing a little of every thing; and while I am telling you all about it, let us go over to the honey-house. But, first, I want to show you a sample of a new variety of oats I am introducing among our farmers. There, Hen, is one head: look at it and heft it."

"My! is that just one head?"

"Yes, one head; there were over 300 kernels on it; but some have fallen off, as it has been handled so much."

"Well, that is far ahead of any thing I ever saw, in oats. What do you call them?"

"They are the 'White Plume,' a new variety which is being introduced this season for the first time in this State."

"What is claimed for them as being superior to other varieties?"

"In the first place, they are more prolific than any other variety, they having yielded 107 bushels per acre on a 20-acre field. They are ten days earlier than our common oats, hence escape being damaged by rust; and, again, the straw is very stocky, so they do not lodge like other varieties."

"Do they sell well?"

"Yes, quite so. Not every farmer buys them, but enough so they will be well introduced by another season; and those who do buy them this year will have some to sell at good prices to their neighbors next fall, for I sincerely believe they will eventually supersede all others. Here we are; let us go into the storehouse first."

"Well said! What are you doing with these combs that you have here all cut out of the frames?"

"I am melting them up for the wax. You see, Henry, I had combs enough for 1000 colonies, and did have 900 colonies at one time; but owing to the past few poor seasons I have reduced my number of colonies to 500; and now, as I have decided to reduce the number still lower, I am melting my surplus combs."

"Why! it seems too bad to melt up such nice perfect combs."

"Yes; but then, I don't want them, and it is too much work and care to preserve them through the summer, although I have succeeded in keeping the moth-worms out of them by placing the boxes of combs over a sheet of tarred paper, with another sheet over, as you directed me to do; and, as you see, it has proved a success."

"But, Manum, why are you going to reduce the number of your colonies?"

"Well, Henry, the basswoods have been cut off about here to such an extent that I think it will be as well for me to have fewer bees and a less number of apiaries. I think two out-apiaries, with my home yard, will be all I care to look after alone, inasmuch as I am going into the growing of small fruit. I think that fewer bees and more fruit will pay me as well, one year with another, as to devote all my time to bees."

"What are you going to do with this great pile of old sections?"

"I am going to cut the comb out of them for wax, and use the sections for kindling-wood. I have formerly used my sections over the second and third time—that is, those that were not finished by the bees, and from which the honey was extracted; but such, even if filled with the very whitest honey, always sell as second quality, hence I have decided not to use any sections the second time, unless they are perfectly free from stains, and unless the comb in then is perfectly clean and white. There is no use, Hen-

ry; it doesn't pay, these days, to produce second-class honey. Sections are now so cheap that one can not afford to use the stained ones, and then sell the honey two to three cents per lb. less than the same honey will bring in new clean sections. It is too much like spoiling a 50-cent jack-knife to save half a cent. I am ashamed of myself that I have used old sections over and over so long before coming to my senses."

"Have you decided that the bee-business has seen its best days in Vermont?"

"Oh, no! not by any means. There are localities where basswood has not been cut off, and probably will not be, for a good many years. In those places, and where they have clover and raspberries in plenty, it will pay to keep bees; and, in fact, I think it will pay here in a small way, but not as well as formerly. But that is not the only reason why I propose to reduce my number of colonies. You must remember, Henry, that I am not as young as I was once; and to look after so many bees, without help, is a little more than I feel able to do; and inasmuch as good help is so scarce, I think it as well for *me* to have fewer bees to look after. Although I have managed, and can still manage, 500 colonies alone in five yards, I prefer to have fewer colonies, and devote more of my time to the queen-business as well as to the fruit-business. If I were as favorably located for the bee-business as are Messrs. J. E. Crane, J. H. Larrabee, V. V. Blackmer, and Mr. R. H. Holmes, I would not think of decreasing my number of colonies at present."

"But, Manum, what will you do with all your empty hives and extra clamps, etc?"

"Well, Henry, I shall offer them for sale at a very low price; and what I can not sell will make splendid kindling-wood. However, I shall not knock them to pieces just yet, as I may wish to again increase my number of colonies, providing the fruit-business does not suit me. In such case I shall doubtless change my location, and try to get a safe distance from wood-working machinery, with the hope that basswoods will be *let alone*. There are yet a few such localities in Vermont that are not occupied; but Bristol is my home, and I dislike to move away if I can avoid it.

A. E. Manum.

DOOLITTLE'S REPLIES TO INQUIRIES.

NECESSITY FOR EARLY BROOD-REARING; SIZES OF BROOD-NESTS, ETC.

Question.—How many standard Langstroth frames would you use in a hive when working exclusively for comb honey? Should prime swarms issue, which will be the best to produce comb honey, the new swarm or the old colony?

Answer.—I would use just as many standard Langstroth frames in the brood-chamber, when working for comb honey, as the queen had occupied with brood, when the honey-harvest commenced in earnest from clover or basswood, according as either one abounded in the locality I was in. For this reason I would use a ten-frame Langstroth hive; that is, I would have a hive that would hold ten Langstroth frames, and have it so arranged that I could reduce it to only a four-frame hive should I find a queen that would not keep more combs than that number occupied with brood, or a five, six, seven, eight, or nine frame hive, just in accord with the prolificness of the queen. There are a very few queens which will fill ten L. frames with brood, when they are laying their maximum number of eggs; hence we wish a ten-frame hive for these queens; and as we do not know just which hive will have such a queen, we will make all of our hives to hold ten frames. Far more of the queens will keep only nine frames filled with brood, and for this reason we wish some way of reducing this ten-frame hive to a nine-frame when it is required. Where the hanging frame is used I know of no better way of doing this than by using a 1⅜-inch board, the same being a little smaller than the inside of the hive below the rabbets, and having the top-bar of a frame nailed to one side of it so it will hang in the hive the same as a frame. Where we find a queen capable of keeping only nine frames filled with brood, and we have ten frames in the hive, take out the one the queen does not occupy, at the beginning of the honey-flow, and slip in the prepared board to take the place of it. But, as a rule, we shall find that by far the larger part of our queens will occupy only eight frames with brood, when we will use one of the boards on each side of the hive, instead of both on one side, as this brings the top of the hive in better shape for the bees to work to the best advantage in the sections. A few of our queens may not prove up to the average as to prolificness, consequently we wish to reduce the size of the hive still further in such cases, and for this further reducing I prefer to use two frames spiked together, having ⅜ lumber nailed on each side, thus making what is known as a "dummy." With these boards and dummies you are to contract each hive to suit the laying capacity of each queen, in the very commencement of the honey harvest, if you would secure the best results in comb honey. Why? Because, if you allow the bees to make a start at storing honey of any amount in the brood-frames, it will be found that they will be loth to enter the sections; and instead of doing so they will keep on storing in the brood-chamber, crowding the queen more and more in her brood space, till at the end of the season you will have very little honey in the boxes, and very few bees in the hive below to go into winter quarters.

Of all the most damaging things to a crop of comb honey, I believe this having lots of empty combs in the brood-chamber at the beginning of the honey harvest is the worst, with the average bee-keeper. Strive to have every queen do her level best at brood-rearing for one month to six weeks before the expected harvest, so that the maximum number of bees may come with the beginning of the harvest; then take away all comb unoccupied with brood, and put on the sections, and you are as near perfection, according to my views, as you can well get; and should the season be a good one, you will be surprised at the good results in honey obtained, if you have never tried this before. But why not kill all the unprolific queens we happen to have before the honey-harvest, and thus have queens that will have brood in eight frames at least? Because we can not tell just which of the queens we supposed were good ones last fall will be the failing ones, till near the honey-harvest; and should we then change we shall throw the colony into an abnormal condition which will work against our securing as good results from that colony as we should have secured had we left the poor queen till the end of the harvest and then replaced her. By "abnormal condition," I mean this: This young prolific queen, given near the commencement of the honey-harvest, will not be content with the number of combs the old queen was occupying; and if confined to these, swarming during the middle of the harvest will be the result, which all know would blight our prospects of honey of any amount from that colony; and if we gave this queen all the room she needed, say nine frames, it would either result in the bees

crowding her down with honey, as spoken of above, or in their using the most of the honey brought in from the fields in feeding the large quantity of brood she would bring about, which brood would hatch so late that the bees from it would become consumers instead of producers. All of these little things have a bearing on the results obtained from the apiary; and as "many a little makes a mickle" when piled up on the right side of our financial column, so in the same way they help to make us badly discouraged when piled up on the wrong side. It behooves us, therefore, to look well after these things and know that all we do tends to move things in the right direction.

But I have dwelt longer on this part than I expected to, so must be short in regard to which will produce the most comb honey, the swarm or old colony. If the swarm comes ten days or more in advance of the harvest, and the old colony is not allowed to swarm again, with proper management this will give the best results. On the other hand, if the swarm comes at the commencement of or during the honey-harvest, then every thing should be turned to the advantage of the swarm, for this will give the most. G. M. DOOLITTLE.

Borodino, N. Y., Feb. 25.

RAMBLE NO. 80.

AT HERRICK'S.

After the whiffletree episode in our last, we had settled down to our usual cogitations and observations, when we were again startled up to the qui-vive state. A woman on horseback came dashing around the curve just ahead of us at a breakneck speed; and our frantic efforts, with whip-persuader and voice, to get our steeds and ourselves out of the narrow road, resulted in just moving their heads a little sidewise. The female and her broncho dashed in beside Bob, and another leap landed them out in the sage bushes, stones, and boulders, where the rearings and gyrations were bewildering to follow; and open-eyed "me" could do nothing but behold her rawhide come down with a swish, swish. The broncho bounded over a boulder into the road in the rear of us, and with another swish, swish, of the rawhide they were out of sight around the next curve. We both heaved a big sigh of relief, turned our horses' heads back into the highway, and proceeded. What a narrow escape! Suppose she'd been unhorsed, and broken two or three limbs, and fainted! We groaned, as only bachelors can groan, and grew pale at the very idea. From Bro. H.'s remarks, he evidently thought he had met an angel, while the Rambler had a private opinion that it was a witch on a broomstick. After these trying episodes we rattled along down the canyon, and were pleasantly greeted here and there with a purling stream of water. On the bottom lands we saw a great amount of sweet clover, and growing to enormous size. We conjectured that some bee-keeper had scattered the seeds.

The next name we had upon our list of bee-keepers was that of Esq. A. T. Herrick, and we soon came to a fair-sized adobe residence, which proved to be the home of this noted bee-keeper of Campo. We reined our steeds up under a shade-tree, and soon found the proprietor; and our first duty was to examine his choice breed of potatoes which he was harvesting. They were beauties, and were grown on the richest of alluvial land down on the river-bottom. Every kind of garden vegetable was growing in truly California style—immense. Even the weeds in neglected places were like a young forest in appearance. Large watermelons were lying in profusion on the ground, and a large one was taken into the house for our delectation.

Mr. Herrick's apiary was off in the canyon, as usual, and he, like many others, acknowledged that he did not care for his bees as he ought, and perhaps, like others, he felt a little discouraged over the two successive poor seasons and empty receptacles. He also facetiously remarked that a good season had discouragements when receptacles enough could not be obtained to store the honey; therefore, being discouraged in both good and poor seasons, the bees were neglected.

At this altitude—2500 feet—the season was much later than lower down, and there was usually very little swarming. This feature was so pronounced that it was hard to keep an apiary up to a given number unless bees were brought up from the swarming-belt. Mr. H. had practiced migratory bee-keeping, and had moved bees over the divide toward the Colorado Desert, and secured a yield from mescal; but this honey has the quality of aloes, and, when eaten, acts like a cathartic, and, I believe, the plant is called the American aloe. A further move of 50 miles would have placed the bees in the midst of the celebrated mesquite, of which there is an endless amount on the desert, and bountiful in the secretion of the most beautiful nectar; but a move of 50 miles into the lonely desert was a little too much of a migrate.

Mr. H. had scattered the seeds of sweet clover; and, though there was a great amount of it, he failed to get much of the honey in his hives, and the only praise he could give it was its good qualities for cattle and horse pasturage.

While eating our melon I noticed in a corner of the room a pile of the finest beeswax I ever saw; and when a proper lull came in the conversation I proceeded to interview him upon his method of rendering, feeling sure that it must be done upon some improved plan. I found the improvement to consist in an extra painstaking method. In the first place, the scraps were thoroughly washed in tepid water. Several changes of water left the comb free from dirt and honey. The clean comb is then put into a clean white cotton-cloth bag, and boiled in a clean porcelain-lined kettle. When the wax was boiled out it was dipped off with a clean dipper, and strained through a clean white cotton cloth into a clean new tin pan. The water for the entire process was clean new rain water, just from the skies. The results were, as above stated, just beautiful virgin wax. As to whether Mr. H. obtained enough extra to pay for his extraordinary care I am not able to state; but the ability to put the nicest wax on the market was probably highly satisfactory to the producer. This method demonstrates that boiling the combs with all of the attendant dirt and honey, in old dirty utensils, will not produce wax fit for exhibition purposes.

While we were deeply engaged upon the wax question, Mrs. H. brought in a bountiful dinner, and we did ample justice to their open-handed generosity. Mr. H. is not only a justice of the peace, but also postmaster. Owing to the dishonest tricks of the postmaster at Campo, Mr. H. was appointed, although he lives three miles from town. This scores another mark in favor of the integrity of bee-keepers.

Books and papers showed the scholarly tastes of the occupants of the adobe; and, though an earthquake had cracked the walls, and a deluge had nearly washed them out, still they loved

their mountain home, and seemed to enjoy life as well as and probably much better than they would if living in costly marble halls.

Our journey was resumed again, and the country was very rough and wild. Our road was soon crowded into the bed of the stream, which it followed for some distance between frowning rocks. There was but little water running; but during the rainy season travel is sometimes suspended for a time. At the upper extremity of this canyon we find the little town of Campo located in a narrow pass where stones vie in size with the houses.

Campo is within one mile of the Mexican line, and has been the scene of many bloody encounters between Mexican desperadoes and the American residents. In the last attack upon the town, four of the desperadoes were left dead on the streets, and only two of the band escaped. The only store is strongly built of stone, has iron blinds, and looks as though adapted to resist quite a siege. Beyond Campo the country is level again, and large herds of cattle and horses are met.

Our photo shows one of the most neglected and forlorn apiaries it is often our *fortune* to see. The hives are Harbison, with a clumsy, ill-fitting super mounted on the top, making them extra tall. They sat at all angles, and the sage-bushes were so thick before some of the hives that the bees found their way through by hopping from one branch to the other.

There were 300 colonies in the apiary; and, though our visit was in October, the honey had not been removed. There was scarcely a hive tight enough in the rear to keep the bees from working out that way. Mr. L. had once lost an apiary of 200 colonies by a brush fire, and we thought this apiary in a good shape to be swept away by the next fire. I learned the fact that bees, during such a destroying fire, scarcely ever leave the hives, but cling to the combs, and all heroically die together. Beyond this ranch the divide is reached, and a descent of 50 miles leads us out upon the Colorado Desert. There are some apiaries beyond Campo, but we completed our journey here and resolved to return. Had it not been so far we would have

LIVINGSTONE'S APIARY, CAMPO, CAL. HARBISON HIVES IN SAGE BUSHES.

In Campo we met Mr. T. Livingstone, one of the older bee-men of the country; and, though an old man, he was gloriously baching it. Hurrah for the bach! His 300 colonies of bees were out three miles on his ranch, and, getting our directions, we proceeded to the busy scene. We found a fine camping-place near a residence occupied by one of his hired men. This man was wedded to a large, buxom, red-headed woman. Two children occupied the most of her attention; and, from the discordant noises from the house, the spanking-machine was kept quite busy. We rejoiced again in the free and easy life of the bach, and the Rambler had to use much fatherly advice to keep Mr. Hansen from going to the door and shouting to the woman, "Well, who's a kicking?" Probably it would have been one of the tow-headed youngsters, as my sketch will show.

visited those mesquite-fields so often extolled. We found men in Campo who were very enthusiastic over the future of the Colorado Desert. Water from the Colorado River and from artesian wells will eventually make the desert the scene of busy agricultural pursuits.

It was our intention to return from Campo on a road further south, and on Mexican soil; but our friends all advised us not to do so without a passport. The festive Mexican might make us some trouble and expense; so we resolved to return to a point well down toward the coast before we crossed.

In all of the country between Del Zura and Campo there is but little fruit-raising, and bee-keepers have a restful time; and, owing to the mountainous country, there will probably never be much fruit raised here. In nearly every apiary we visited we noticed more or less dead

colonies, and more or less combs destroyed by moths; and it became an interesting speculation as to how much beeswax is thus wasted in California apiaries. The aggregate would astonish even a California bee-keeper. The nature of the country precludes it from ever being thickly settled, and consequently there are many lonely homes in places where the sight of a human being is rare. Homes are seen perch-

THE JOYS OF WEDDED BLISS.

ed upon lofty terraces, where there is no visible means of support, and where all of the water used by the occupants has to be drawn up on wagons, or packed up in honey-cans on horseback. Many of these places are deserted after a time, the occupants evidently getting tired of trying to boom the country on their own hook.

There are many fine honey locations all along next to the Mexican border; but they are not occupied, for the proximity to the pilfering Mexicans would necessitate the owner's constant vigilance, and a constant residence there. Wherefore an apiary just on the border would not accord with the habits of the RAMBLER.

PARTHENOGENESIS QUESTIONED.

A DEVELOPMENT OF THE DZIERZON THEORY; INVESTIGATIONS OF THE GERMANS ON THE SUBJECT.

Years ago, Dzierzon startled the bee-keeping world by announcing that eggs were laid, and from them living bees were hatched, without any fertilization. Bitter was the conflict waged over it; but at last Dzierzon was left master of the field, and is to-day honored the world over, and the Dzierzon theory respected everywhere.

Now, however, there are signs that the question is to be reopened, the demand being made to relinquish the theory, or, at least, to modify it. At the great convention of German and Hungarian bee-keepers at Budapest, Mr. Edward Metzger announced his belief that the commonly accepted theory, that the spermatheca was simply a receptacle, was incorrect. In the first place, it seemed unreasonable that spermatozoa by the million could exist in a receptacle scarcely visible to the naked eye, and that they should in such a receptacle have so long a life-term as four or five years.

After microscopic investigations during the year, he was ready to affirm that the spermatheca of the queen is a gland, just as much as the testes of the drone, the ovary of the queen, or the poison-gland of the worker, each of which secretes its own peculiar product. In the spermatheca of an unfecundated queen are secreted cells without a nucleus or germ. In mating, the queen receives cells with nuclei and spermatozoa. The latter increase in the spermatheca. Taking a queen in the height of egg-laying, and crushing the spermatheca, pieces of the inner secreting membrane will be found, from which the spermatozoa are developed, and to which they adhere like leeches. So the spermatozoa are developed before the cells are detached from the membrane.

Quite different is it with a queen which has ceased to lay. The spermatozoa are not so numerous, and show activity only when moistened with a weak solution of salt. In winter, even the salt solution fails to excite activity. This shows that the number of spermatozoa increases and diminishes at different times—a thing which could not be, on the supposition that the spermatheca is simply a receptacle to contain a constantly diminishing number of spermatozoa.

At a later date, Mr. C. Weygandt came to the support of Mr. Metzger by saying that he had examined the spermatheca of a laying worker, and found cells therein. Thus Mr. Metzger asserts that there is in every queen the means within herself of fecundating her eggs, so there is no such thing as parthenogenesis, or life without fecundation, the queen being a true hermaphrodite.

To put the matter in a few words, it seems to be something like this: In the spermatheca, before fecundation, there is material constantly engendered that serves to impregnate eggs, from which only drones hatch. On mating with the drone, spermatozoa are introduced, which serve as seed to multiply; and when eggs are impregnated by these, the female progeny is produced. But no egg produces a living result without being impregnated one way or the other.

The promulgation of this theory was received with applause at the convention, and the different journals have published it in full; but the editors fight shy of it. The *Bienen-Vater* comes out in strong terms against it, saying, among other things, that it is only a revival of the same theory advanced in 1881 by E. Pflueger. Gravenhorst makes no comment; and Lehzen, of the *Centralblatt*, refers the matter to the learned Prof. Leuckardt, of Leipzig, who says Mr. Metzger has given, instead of observations, conjectures which float in the air, "nothing but false suppositions—false conclusions."

It seems a little strange, that, after nearly half a century of investigations, the Dzierzon theory all the while becoming more firmly established, we should be asked to make a new departure. No doubt investigations will be renewed, and the truth established. The fact that the new theory is opposed does not prove it false, any more than it proved the Dzierzon theory false. Indeed, in a certain sense the new theory may be said to be a fuller development of, rather than destructive to, the Dzierzon theory. The venerable Dzierzon was present at the convention, and, although conservative, and prompt to oppose what he conceives to be error, he expressed no disapprobation, but rather gave his approval, by quoting, from his many years' experience, facts that seemed to favor the new theory. He had frequently had Italian queens mated with black drones that at first produced mixed workers, and afterward pure Italians.

At present the new theory seems to stand only as a possibility; but time proves all things. In actual practice it can hardly make a great deal of difference whether it be accepted or rejected. I can see where it might be of use in just one little item. I had at one time a queen which

laid well, but never an egg hatched. I think such cases have not been so very uncommon, and no explanation, I think, has ever been attempted, other than simply to say such things sometimes occur. Now, it will be very convenient, in case we are ready to admit Metzger's theory, to say that there was some trouble with the spermatheca, which prevented the impregnation of the eggs, hence none could hatch.

Marengo, Ill. C. C. MILLER.

[A report similar to this was given on page 168, but as it is put in a new and different form, perhaps it will help to add interest to and throw light upon an already important subject.]

LADIES' CONVERSAZIONE.

MRS. AXTELL'S LETTER.

SOME INTERESTING FACTS IN REGARD TO WINTERING.

March 1st our bees had a fly for the first time since the middle of November, except two colonies that were in a warmer location than the rest. I expected some of the colonies would be dead, but all are alive. Some have lost a considerable number of bees lying dead in the bottom of hives, which necessitates cleaning the hives out. We bought four old box hives, large size, last fall, heavy in honey—60 lbs. or more, I should judge; black hybrid bees. We set them in one of our outdoor chaff hives and raised them up from the bottom-board on blocks; set the hive to the front of our hive and packed in chaff all around, except in front; put on a top-story band and filled in chaff on top. Those hives have scarcely any dead bees on the bottom-board. I look for them to come out strong. One of those has not had a fly since the middle of November. It stood in the shade when the others were flying. As there were scarcely any dead bees under the hive, and no bees flying, and strong last fall, I wondered what had become of the bees; so I pulled off the top and dug down into the top of the old box hives, and there I found lots of bees clear up in the top of old hive, warm and quiet and contented. They acted as if they did not feel the need of flying; after that, a dozen or so came out.

From the way those box hives packed in our big chaff hives have wintered, I feel strongly inclined to think such an arrangement can't be beat. The box hive was solid except on top, where were holes large enough for bees to come up into boxes, which were covered over with cloth, the holes being not more than two to four inches square.

But we can't handle bees in the box hives—can't manipulate them satisfactorily during the summer. We generally find holes through the combs so that the bees can pass to all parts of the hive readily, and the sheets of comb are taller than broad—about the shape eight of our Quinby frames, if set up on end, would make a hive.

I do not feel satisfied with our record of wintering out of doors in the past. It is too much trouble to build up weakly colonies ready for the spring harvest; and, if not strong then, bee-keeping doesn't pay.

We have no trouble to get the honey when there is honey in the flowers, with strong colonies; but I am sure our wintering outdoors is defective. We can winter in cellar with but little loss—almost perfectly when they have good stores; but it is too much trouble to bring bees home from an out-apiary, and too much danger attending it; and we must winter the out-apiary out of doors.

Last fall we tried a new arrangement. We made a box with only top and sides to fit over our six Quinby frames. The frames were raised up 1½ in. from the bottom, and packed with chaff at sides and top; but a fourth to a half of the colonies lay dead on the bottom-boards, while scarcely any were dead on the bottom-boards of box hives.

Ice was found in entrances of the hives twice during the winter after very cold spells; entrances were entirely sealed up. The ice was easily melted out by pouring in boiling water from a tea-kettle, pouring in water long enough to clean it all out and wash the frozen dead bees out a little away back into the hive. As the hives are all leaned forward, being four to six inches higher in the back, the water would all run out at the entrance. A little steam, I suppose, would rise, but I think not enough to injure the bees if the weather was not too cold. In very freezing weather I think I should not like to risk even that much steam. The hives being pitched forward was, I think, one reason of the entrances being frozen full of ice. Do you know whether others who did not lean their hives forward were troubled by the entrances freezing full of ice, where they used sealed or tight boards on top, instead of chaff. We had two hives packed with chaff on top; and even in one of those the entrance was full of ice once, with boards leaned over the fronts of all hives out of doors. I think more depends on having a good wintering hive than in the location. If they are warm, dry, and healthy, they don't seem to care whether they fly or not.

In regard to sweeping light snow around the hives to protect from the cold in the first part of winter and midwinter, I should like to know whether others think it best to do so, first leaning a board up in front of the hives to keep the snow out of entrance. It does seem to be a great protection, but it has its disadvantage by leaving a bank of snow around the hive when the snow has melted off elsewhere. When bees want to fly they drop down on to the snow and ice and cold water, and may perish unless straw is freely strewn around, which litters up the yard.

If sloping ground could always be had for the apiary, the water would then run off; but we must place our bees where they will be the most handy to work with, even upon level land. Ours is slightly slanting to the south, and yet the melting snow came near running into two entrances when melted, although all hives are sitting upon bricks.

I have seen it stated that bees rise from the snow after it is crusted over, but they don't fly when there is a crust on the snow. When warm enough for them to fly, the snow or ice is soft on top.

A GOOD IDEA.

We happened to hit upon that of raising up one side of our hives for cellar wintering. As our hives are clamped at the sides, instead of being nailed, they have almost too small entrances for cellar wintering, but large enough at all other times, unless it be in very hot weather, and then the front of the hives can, at one corner, be unclasped. Now, as we go from one hive to another and peep in, we find the bottom-board nearly clear of dead bees, although the frames are not lifted up. For three or four winters past we lifted the frames up 1½ inches; but we find that it is unnecessary, as it causes a great deal of work to lift them up in the fall and let them down again in the spring.

One hive got overlooked in being set up at the side, and bees had only their entrance to come out of the hive. I watched it all the fore part of winter, and the entrance kept open all right; so I got a little neglectful. Yesterday I looked after it and found the entrance entirely closed

and half of the bees dead. As it was at the furthest corner of the cellar from the door, I forgot to look after it the last few weeks.

A very bad stench arose from the hive as soon as opened, and the combs were wet and moldy, the dead bees wet and soft, probably caused by the excitement of the poor bees being shut in, and the vapor from their bodies being shut in the hive; while from hives that were open, the dampness passes off.

INVITING CHOLERA.

A few such hives, it seems to me, would invite cholera to our homes in warm winters; and even in cold winters the fumes must more or less penetrate our rooms above. I found the bees in that hive in much worse condition than are the dead bees upon the floor. I think the bees upon the floor should be swept up once in two or three weeks—by all means as soon as they begin to mold, which in some cellars would be sooner than in others. There are but very few dead bees upon the cellar floor this winter—the least I remember of ever seeing, showing that healthy stores make healthy bees.

MRS. L. C. AXTELL.

Roseville, Ill., March 3, 1893.

[There is no doubt that it would be better for you, as well as for many others in equally cold climates, to winter bees in the cellar. Our own experience, as well as that of others, proves that it pays to give something more than the ordinary entrance for indoor wintering. For experiment, we tried a few colonies one winter, leaving the ordinary entrance, and neglecting them on purpose. The result was, as in the case mentioned by you, that nearly all died, and the inside of the hives was positively filthy, and the stench was unbearable. No wonder the poor bees died. By lifting the hive up from the bottom-board, or, as is more feasible with the most of us, taking the bottom-boards off entirely, and placing the hives four or five inches apart, one over the space between the two below, ample bottom ventilation is afforded.]

HALF-STORY BROOD-CHAMBERS

AS EXTRACTING-SUPERS.

In looking over your latest catalogue, Mr. Editor, I find that you now keep in stock half-story frames which you recommend for extracting-supers. Of course, they will also answer nicely for brood-frames; and your offering them for sale will enable any one of your customers, at little expense, to fit up a few half-stories and give them a trial as brood-chambers, according to my brief recommendation in GLEANINGS, No. 1, 1892. I have used them now for several seasons, as an auxiliary in the production of comb honey, and I can say that I am getting to be more and more pleased with them. Others also seem to take interest in them, and wish to know more about them, judging from a number of communications I received from different parties since I first wrote about the advantages of the half-story brood-chamber; and for this reason it might not be out of the way to enlarge a little on what I wrote then. But right here I want to caution every reader of only limited experience to try them on but a small scale at first.

The most essential feature of these brood-chambers is, that brood-frames and wide frames, which hold the sections, are of the same size; that is, both kinds may be used in the same chamber, and this feature will enable us sometimes to secure a few sections of nice honey when it would be nearly impossible in any other way. I believe it even possible to realize a small surplus from the hard-maple bloom, for the yield from this source is often wonderful. Sometimes whole combs (usually drone combs) are built out and filled with brood and honey, as we have had occasion to notice in cases where a comb was left out by oversight. Of course, not all our colonies can be expected to be strong so early in the season, but perhaps a portion of those wintered in chaff will be. Then, again, the weather is not always favorable. But if it should be warm when the maple is in bloom, and we remove half of the brood-combs from the upper half-story, inserting at the same time one or two wide frames having the sections filled out with foundation, then closing up with a dummy to fill out space and to crowd the colony, we may have the pleasure of getting a taste of the fine maple honey.

During fruit-bloom this operation works admirably, as we have at this time more strong colonies; however, to make the thing a perfect success, metal excluders between brood and sections had better be used, although more often I have taken my chances without regret. If the weather is fair while apple-trees are in blossom, my other plan will also work well—that of taking away all the brood and giving the colony a half-story brood-chamber, with foundation-filled frames, upon which a super is placed, and sections also filled out with foundation. An excluder will be found necessary; and if a dummy is used at each side of each super, in place of a removed wide frame, all the better.

Quite a number of years ago I made up a lot of double-tier wide frames holding eight sections each. These I used for several years in my brood-chambers of full size (had no half-stories in use then); but it was difficult to get the lower tier of sections completed. For this and other reasons I discarded them finally. By the half-story method we can have brood below as well as on the side of the sections, and no trouble will be experienced—bees not entering sections so placed, no matter what strain of bees is kept.

It must be borne in mind, however, that, when we contract early in the season, we do it at the future numerical strength of the colony; and, as soon as possible, the removed brood-combs should be returned with a frame of some inferior honey from the year before, such as we are often enabled to obtain in the fall from buckwheat, asters, honey-dew, etc.; for our aim must be to have our bees ready for the basswood season about July 15.

My treatment of swarms, etc., I have given before, so I need not say any more on that subject.

In addition to the above I wish to say that these shallow half-story frames are very nicely adapted for nucleus hives; for a nucleus colony is in much better shape when on more but smaller frames than when on fewer but large frames.

For rearing and fertilizing queens in upper stories over excluders, *a la* Doolittle, these half-story chambers will also prove to be just the thing. I now use no others.

Naples, N. Y., March, 1893. F. GREINER.

[It seems to us, that, if we are going to have shallow extracting-supers, they should be made the same depth, and be identically the same as those used for holding single-tier 4¼ sections. Accordingly, as there seemed to be a demand for shallow extracting-frames, we placed in our catalogue this year, not exactly half-depth frames, but frames that would go in the half-depth dovetailed body, or, what is the same thing, a dovetailed super. As there are thou-

sands who have these dovetailed supers, these shallow frames can be easily tried at no expense for hives.]

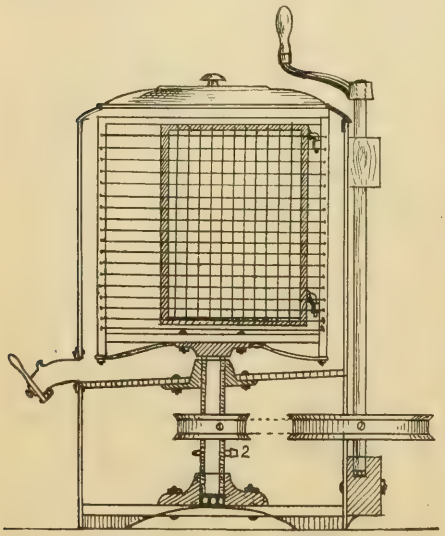
CARPENTER'S EXTRACTOR.

DISPENSING WITH CROSS-ARMS, GEARING, ETC.

Mr. Root:—Thinking that you did not see *all* of the devices for honey-extractors while you were in California, I send you a pencil-sketch of one that I made three years ago, and one that has done extra good work, for 140 stands of bees. I took 6½ tons of honey the first year, ¾ of a ton the second year, and 3½ tons the third year, and I do not see but that it might run a lifetime and do good work.

The first feature is, that the gearing, or belting, is underneath, doing away with a cross-bar over the top of the can that is in the way of taking out and putting in the combs. The second feature is, that the reel is wired horizontally, as you will see. The baskets are wired perpendicularly, and swing just as they do in the Cowan extractor.

The wires make square meshes when the basket swings against the wire on either side of the cage, keeping the wire meshes from clogging with thick honey and comb cuttings in hot weather, such as we usually get here in California.



SECTIONAL VIEW OF CARPENTER'S EXTRACTOR.

You will notice that the can at the top has a rim turned in to keep the spray of honey from flying over the top. It also has a lid to close the top of the extractor to keep out bees. As a faucet is hardly ever used here, it is well to have one to keep out bees when not in use for a short time. The baskets can be lifted out at any time, as they are just hung on hinges, like a gate. The reel can be lifted out just the same by taking out a pin at Fig. 2. The shaft is hollow where the pulley is fastened, and another inside shaft socketed in it is fastened to the reel. When the pin, 2, is taken out, the cage comes out easily, with the inside shaft to which the reel is fastened. The bottom of the extractor is made of wood, and is covered with iron, and slants toward the faucet, as you will see. There is a tin tube all around the box, that goes through the bottom of the extractor. Next to the floor is a stout hard wooden piece that the lower box and shaft rests on.

This machine runs easily, and without any noise from cog-gearing, and you can hear the honey striking the can like rain. There is no shake to the cage, as you might suppose, no matter if there is only one comb put in at a time.

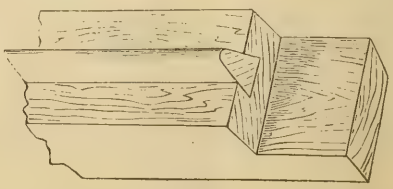
I don't want it understood that I am manufacturing extractors. I want those who have their hand in the business to make improvements whenever they are presented. If you can see any thing in this extractor that you can make use of, you are welcome to it. For my part I would use a two-frame extractor; but of late there are a few who would like larger ones. To such I would say that they don't need them, not even in California; but if they will have them, just make them and let them work as hard as they please.

Los Angeles, Cal. H. F. CARPENTER.

[There are several good features in the extractor. There have been some others made on the same plan before, we believe. Indeed, while we were settling upon the details of the Cowan we had thought of constructing a machine on the same principle; but we found, after careful consideration, that it would make a very bulky and heavy machine, to say nothing of the great cost. The freight on it in many cases would be much more than the selling price. After all, to one who is accustomed to it, the narrow cross-arm is no inconvenience and very much cheaper.]

A PROPOSED COMB-GUIDE.

The groove is made ¼ in. deep and $\frac{5}{16}$ wide at the bottom, and only $\frac{3}{16}$ wide at the top. The comb-guide is made about like a triangular-top-bar Simplicity frame, but the size is $\frac{5}{16}$x¾ wide, and just the length of the inside of the top-bar. The manner of putting in is to push it in from the end of the top-bar, and it will stay in its place with no more trouble. The groove is made with a grooved saw $\frac{3}{16}$ wide, and grooved in ¼ deep; then put on an 18-gauge rip-saw,



and by setting your miter-board so as to groove out $\frac{1}{16}$ at the bottom, and just at the edge at the top, and you have to pass it over the saw two times, first on one side, then on the end; turn your top-bar, and then groove the other side. This is quite a lot of work, but it will save the top-bar so we can have it ⅞ thick, and will prevent burr-combs and have a comb-guide just the same. J. G. RISLOW.

Lake Mills, Ia.

[It is possible to make a comb-guide, and attach it in the manner shown in the cut. The guide itself is easy to make, but the operation of cutting out the V-shaped groove is somewhat difficult and expensive—rather more, we imagine, than the bee-keepers of to-day would be willing to pay for. We have now changed our top-bars so they are practically ⅞ thick, with a slight molded comb-guide, left, as it were, in relief on the bottom side of the bar.]

RECOLLECTIONS AND EXPERIENCES.

BY AN OLD BEE-JOURNAL EDITOR.

It is seldom possible for a beginner to decide upon his future course of action with regard to a pursuit. With us it was different; for, having followed bee-keeping for sixteen years, we had learned many things. First, we were satisfied that 50 to 75 colonies will stock up our locality, and probably many others, and that 50 colonies in one place, well attended, will produce more profit than three times that number in the same yard. Secondly, we had no desire to engage extensively in the business, therefore we did not have to plan our hives with reference to ease in moving upon wagons nor to curtail their size. Third, we realized that the great evil to contend with is loss in winter; and, from extensive observation, that none were more successful in winter than box hives. Fourth, we realized that the keystone to success is strong colonies, and that, if possible, a hive should be adapted to either cellar or outdoor wintering. Fifth, we remembered a lesson in natural philosophy, taught in our schooldays; to wit, that, while a long pendulum travels through the most space, the short one makes the greatest number of vibrations; hence in a bee-hive, to secure few pieces and short motions is desirable. In the hive, we assert that rapid manipulation depends upon lateral motion of the frames, and little occasion to lift them. Sixth, no care nor expense should be spared to secure good lumber and the most accurate workmanship that care and good machinery can produce. The various parts must be exactly of a size, and fit in any hive. Such hives should be well and frequently painted, to prevent warping and decay. For some time we have soaked the bottom-board, also chicken-coop material, in crude petroleum, and we are inclined to believe it the best as well as the cheapest wood-preserver that can be found. A few of our last hives are soaked in this material, and we shall observe their condition with interest.

A cube is the nearest practical approach to a sphere, in a bee-hive; and long ago Mr. Quinby gave, as the result of his observation, that a cube of 1728 inches meets all requirements, except that, in backward springs, the supply of honey is liable to exhaust. Of course, with frame hives this evil is not operative.

In line with this reasoning we adopted the new American size of frame, which is 12 x 12 inches inside, eight of them giving the desired size and shape to the brood-nest. Of course, we make them Hoffman style.

To meet our needs, the case to hold the frames is 24¾ inches long, 13¼ inches wide, and 13 inches deep, inside measurement. The rabbets are cut deep enough to allow the tops of the frames to sink $\frac{1}{16}$ inch below the top edge of the hive. Hand-holes are cut in all four sides, and the corners are gained together and cross-nailed to give strength. The center of the front is found, and 4½ inches to each side a 1½-inch hole is bored ¼ inch from the bottom edge. Thus the holes are 9 inches apart from center to center. Facing the hive, in the right-hand end, near the upper rear corner, we also bore a hole. The three holes are provided with buttons like those used by Mr. Hoffman.

We never admired a fast bottom-board. We make ours of 1½ inch strips, to which half-inch ceiling, cut in pieces 15 inches long, is nailed. This bottom is fastened to the hive with Van Deusen hive-clamps. The board side turned up leaves a space of $\frac{7}{16}$ inch under the brood-frames. When turned the other side up, the space is $1\frac{5}{16}$ inches. As first placed, the followers at both sides of the frames close all apertures; when reversed, the bees pass out freely through the 1½-inch spaces, so that, when bees are moved upon wagons, if the wire-cloth ends of the buttons cover the holes in the sides they occupy the entire case, and are not apt to get overheated nor to smother.

A division-board and two following boards are required with each hive, and fit loosely, yet sufficiently close to prevent any bees from getting past them. These are made of several narrow boards fastened together by strips nailed to their ends with a strip at the top that rests upon the rabbets, to prevent dropping down. By making them of several pieces, the size and shape are more uniform.

We trust your readers will note carefully the above description of case and bottom-board, for we have many points still to unfold. This hive holds from one to seventeen frames, according to the needs of the colony.

There are hundreds of large bee-keepers to whom our hive and management may not be well adapted; but there are also thousands who keep bees as a side issue, who at present secure only a tithe of the honey they should produce, and to whom we hope to impart some useful hints.

Soon after we began bee-keeping the second time, we found a good market for all the extracted honey we could produce; and although we prepared a box-honey arrangement for our hive, we have not harvested a pound of box honey.

For nine years, except this present season, from 19 to 25 colonies, spring count, we have secured a yearly average of five barrels, or 2500 pounds, of extracted honey. We are satisfied that the honey season has changed, and that not as much nectar is secreted now as 25 years ago; yet, with present average, we know of no branch on the farm that pays as large a profit for time and money invested as our bees.

Beginning with spring time, we will try briefly to outline our methods:

During winter we have from seven to nine frames in each brood-nest. When a day arrives warm enough for bees to fly well, they are overhauled. If many have died, and the cluster is small, combs are removed and the nest is contracted. Plenty of stores are assured to all; the bottom-boards are loosened and cleared, and several thicknesses of bran-sacks, old quilts, or carpets, are tucked over, and to the sides of the weakest. One entrance-button is closed, the other contracted to a single bee. The weather permitting, about once in ten days we examine all. At the approach of warm weather and fruit-blossoms, we often scrape and break the covers from capped honey, to induce brood-rearing.

About this time, or a little earlier, and often later, a tablespoonful of honey or syrup fed daily is the best investment that we ever made. This is quite a task, however, when the covers have to be removed, and daily allows the warmth of the cluster to be lowered. We shall try hard, and ask assistance from your readers, to contrive a feeder arranged with a tube and cork, so that feeding can be done from the outside, directly into the cluster. Duties performed easily are done cheerfully; otherwise they are often neglected.

When settled weather is assured, and the colonies get strong enough to make sure that no brood will be chilled and die, we begin our annual spreading. The entire top of the frames is exposed, to show clearly the size and strength of the colony. If six or more combs contain brood, we open the cluster and insert from one to three worker combs. This operation is performed occasionally at first, and more frequently as the season advances.

About the time we expect a flow of honey we remove one follower and select from seven to nine of the best worker combs, and put them with the queen in one end of the hive. In the front bottom corner, near the center, we lay a strip of tin two by six inches, bent thus—L. A perforated division-board is now inserted directly over this tin slip, and the remaining combs are placed against the perforated division. We now slide the hive forward nearly 1¼ inches, and close the buttons. This provides a sort of portico, a complete entrance, a cool hive, and ready access for all bees shaken upon the ground. We have frequently known several quarts of bees, clustered upon the outside, to go back at once after the long entrance is provided. You conclude that this entrance gives advantage to robbers; but experience teaches otherwise. A robber dislikes very much to enter any crevice into which it can not see. The bees in the hive, in a state of excitement, cluster out of this crevice enough to make it impossible for a robber to pass unnoticed. Black bees are not so alert, but these we do not have. If a colony is getting robbed, a few sprigs of asparagus thrown upon the ground close to the front of the hive generally stops the operation.

At this point we must digress, and draw attention to some advantages of the long case and *genuine* Hoffman frame. Dr. Miller's language suits our idea so completely that we quote him as follows: "But, about that frame, Mr. Editor. First, I don't see why you should call it a 'Modified' Hoffman. Why, you've modified the Hoffman all out of it. The soul and essence of the Hoffman is the closing-together of the top-bars at the ends along with the closing of the end-bars at the top, so that no bee can enter from above to deposit propolis."

We add, that it is misleading, a misnomer, and will lead many to condemn the Hoffman frame who really never used one. When the top-bars are closed at the ends, a sheet of enamel cloth with a cushion or quilt over it makes all tight. A honey-board is now as far behind the times as a canal-boat is slower than an express train. Unless metal rabbets are used (and they are worse than useless) with Hoffman frames, the bees glue the narrow top-bars below, at the two sides, and at the ends. To loosen them is often a severe strain on the frames, the nerves of the bees, and those of the operator. With top-bars closed at the ends, the frames can be glued only where they come together, and at the point where they touch the hive, at both of which only a little propolis can be deposited, and but slight pressure is required to effect a separation. The warm or rarefied air ascends; and when the ends and tops are closed, no escape is provided; and with a tight sheet on the frames, we have a box hive with the further advantage of double walls for a distance. Burr-combs at top and sides are also quite dispensed with.

As regards lateral motion of the frames, if only for fall and spring convenience we could slide our combs, save time, and avoid much of the lifting. We would not shorten our case. Suppose the queen is to be found. Remove the enamel sheet; a glance at the cluster, to the experienced eye, will about reveal her whereabouts. One follower is drawn back, say four or six inches. The frames are separated at the point where she is supposed to be, and, six out of ten times, we see her tail wagging as she starts to go down. If not in that space, open the next where she is supposed to be. A little moving both ways from the center will surely reveal her before the bees become excited or even fill their sacs with honey.

Suppose you wish to spread the brood. Proceed as above, and you see at once the amount and location of brood. It is just as easy to ascertain the quantity of stores. When preparing for winter, begin at the near end; glance at both sides of a comb; lift it an inch or two, and proceed through the hive; when done, shove the combs back to the starting-point.

When frames are to be closed together we generally bring them near each other, then a slight puff of smoke at each corner starts the bees, and the combs are closed up. Another way is to grasp the comb near the middle, or with both hands on the narrow part; lift it two or three inches and bring together, and lower in place. Just how to do these things is hard to describe. The quick-witted soon "catch on."

Smooth flagging-stones, about three feet square, bedded level, make very desirable stands for hives. We use a few, and hope soon to increase the number. With these, to mow the yard is an easy task. Unless a spirit-level is employed, few of us realize how many of our hives are not level; and the loss at all times, especially when foundation is to be drawn out, is not realized. When stones are not used, the Heddon stands, or similar skids, are necessary.

Before you read this, perhaps our hives will contain enough honey, and we can extract them.

Canajoharie, N. Y. J. H. Nellis.

TO REV. L. L. LANGSTROTH, FATHER OF MODERN APICULTURE.

AN OPEN LETTER BY THE PRESIDENT OF THE ONTARIO BEE-KEEPERS' ASSOCIATION.

Dear Sir:—I now take the liberty of presenting you, through the kindness of Gleanings, a picture of my apiary of 72 colonies, as I have learned, with a great degree of pleasure, through its columns, of your freedom from the old head troubles which have for so many years afflicted you; and I sincerely trust you may be spared a return of them in future.

The picture speaks for itself, in so far as you are concerned; and your observatory hive, made for me in 1863, with the name and position it occupies in the apiary, shows the respect and appreciation you are entitled to. By reference to your books you will also see that I purchased an Italian queen from you in October, 1864, and it is with pleasure I occasionally peruse all the correspondence (which I still retain in my possession) that passed between us, as well as read your old catalogues containing an illustration of the old extractors, or, as it is termed, "machine for emptying honey from the comb," a sample copy of which I, at your request, returned you on my reaching home from the meeting of the North American Bee-keepers' convention, held in Detroit in 1885, when you showed me a sample of *Apis dorsata*, preserved in alcohol; and, although that was the only occasion I have had the pleasure of meeting or seeing you, it nevertheless seems as if I had known you from my first perusal of your third edition of the "Hive and Honey-bee," in 1863, which is also still in the house.

In regard to the hive, I may say it has contained bees continuously ever since (nearly 30 years), and has had no repairing, except one new roof, and, of course, numerous coats of paint, during all those years. I still have the old-fashioned honey-board containing the 9 one-inch holes, Plate 8, Fig. 21, 3d Ed., and also a few of the glass honey-boxes used with the hive at that time. You will observe the hives are not only all numbered, but each one named after some prominent bee-keeper in the United States or Canada. You will also notice the outside cases are still on the hives (August), minus the packing, which is removed about

F. A. GEMMELL'S APIARY, STRATFORD, ONTARIO, CANADA.

June 1; and although the system has advantages in regard to shade, freedom from confusion when the packing is removed, and many other minor points of importance to me, still I am not sure but there are other and more important benefits which would go toward abolishing them during the summer months, especially if working for comb honey. The bottoms of the cases are, of course, loose, thereby greatly facilitating the removal of them when necessary. For many reasons I do not desire a permanently chaff-packed hive. The portable apron, or alighting-board, is a greater convenience than if a fixture to the front of the case, for the reason that, in cold weather, it needs only to be raised a little more perpendicularly, and thus prevent the snow from lodging and closing the entrance entirely, while at the same time it also prevents the cold wind from entering, as well as preventing the sun's rays from enticing the bees outside in unfavorable weather.

If you look closely you will quite easily discern the box containing the queen-cage, in readiness for capturing her majesty on the issuing of a swarm; also a Miller feeder, escape-board, ladder, swarming-box, hive-cart, and solar wax-extractor, as well as other conveniences that ought to be found in a properly conducted apiary.

The figures in the foreground are as follows: First to the right is Belle, who assists in the household, and also in the apiary when necessary; second, my son Raeside (16); third, his mother; fourth, my sister; fifth, my mother; sixth, my daughter Mildred (13); seventh, remaining figures (lady) in front is Mrs. Gemmell's mother; eighth, the cowboy sitting in the chair is your humble servant— F. A. GEMMELL.

Stratford, Ont.

JAKE SMITH'S LETTERS.

TAKING HONEY FROM THE PALLUS HIVE.

MR A. I. G.eenings—deer Sir:—You kno I told you about my pallus. My old woman diddent beleave in it as much as me. She thot mabee I was took in. But I told her it wood be reel handy sumtime when I was gone, & she had cumpenny, for her to take a nife & a plate and jist go to the pallus and help herself whenever she wonted to. That peacified her considdible.

Court sot in July, and I got a summons onto the jewry. I was gone a weak or nearly that. 1 day while I was gone, Misses Porter cum to spend the day, and Misses Barber cum with her. Misses Porter brot her nitten, and Misses Barber her sowin. Misses Porter is proper fond of bisket and hunny. My wifes a master hand to make bisket, but they was no hunny to go with it. Then it jist cum to her that she cood git sum in the pallus.

So along in the afternoon, when she had her bisket all reddy to bake, she took a nife & plate and slipt out to the other side of the barn, where the pallus was. You see, I sot the pallus out back of the barn, because bees doant git along so well if you overstock them. They was seven scaps of bees up near the house, and I was afraid they mite be overstockt if they was enny more there.

So she went out as brave as you please, but the rain had sweld the pallus dore, and it was sweld so she coodent git the fasnin open. So she got a stone to pound the fasnin open. Pirty soon a small army of bees cum at her, lickity brindle. You know how they will, when they git mad. And they was mad, and no mistake.

She started on the run, the bees after her, a yellin and a screechin. One jabbed her in the chin, and anuther in the iye. In slappin at them she nocked off her bunnet, and her hair begun to fill up with bees. The wimmen heerd the racket in the house, and out they cum. But in they went when they seed what was up.

"THEY WAS A SIGHT"

As quick as she got in the house, the bees staid out doors, accept what was sizzlin in her hair.

"Did they git mad?" says Misses Barber. "I doant know," says she, "but I know I did." Then they dug out the stings and put on sallerratous. "I've heerd how smoke'll tame bees," says Mrs. Barber. "But I can't smoke," says she, "and, besides, I haint nothin to smoke. Fred Fraser left an old pipe when he wurked here, but I haint no tabacka." "I tell you what," says Misses Porter, "I can smoke enuff for that, and we can take catnip. It's more soothin like."

So they loaded up the pipe with catnip, and lit it, and started. But before she got in the 1st whiff, a bee give it to her rite onto the end of her nose, and she lit out, a pawin like sin. "Do they seem soothed?" says Misses Barber. She jist sed it to tant her, for she was a laffin fit to split. Jist then a cupple of bees took her in the face, and she stopt a laffin and began a clawin. "Do they seem soothed?" says Misses Porter.

Then they was bound they was a going to have that hunny enny how, so they bilt a fire of corn cobs all round the pallus, tied themselves all up soze a bee coodent tuch em, and then pride the door open. And how much hunny do you think they got? not a blame bit. The pallus was jist as emty as the day it was sot there. But it was a poor year for bees ennyhow.

So they had to eat the bisket with butter and maple molasses. And I've eat worse things than that. And jist as they was a settin at the supper tabell, I cum home. I wisht you cood a seen them wimmen. They was a sight.

JAKE SMITH.

RACES, OR STRAINS OF BEES.

HEREDITY.

In connection with the breeding of live stock we find there is great stress laid upon the breed and the individual; and it is only too apparent that the farmer who pays the greatest attention to this subject, and follows out most closely the rules which he knows to be correct, is the one who is most likely to be successful in his operations. Too many bee-keepers, alas! pay but very little attention to either the breed or the individuals. We pursue a kind of haphazard system, which can only lead to very inferior results. Where would our famous dairy and beefing strains be to-day if their ancestors had been bred no more intelligently than we do our bees? They would be where the best strains of bees are yet—undeveloped. We have not as yet obtained the best results in bee-keeping. Why are we so drifting? First, perhaps, because we have not under control the selection of sire, as we have in stock such as cattle, horses, and sheep. Yet even here, when once the importance of the question is thoroughly brought to the attention of bee-keepers, more care will be observed in not permitting the drones from undesirable stocks to fly. Of course, we must all recognize that nature has done much for us in the selection. First in the royal combat, which takes place under natural conditions, in the majority of cases gives us the strongest and most active mother. Again, in the drones the same disposition we are apt to get when the queen is mated upon the wing. Yet the royal combat is more of an exception than it at one time was, and strength and activity, although highly prized, perhaps most important, may become additionally valuable with certain other characteristics added. We want, perhaps, only one trait of the black (or German) bee, and the characteristics which the majority of the Italians possess. The Carniolan bees, I believe, possess some valuable traits; yet among these traits are others which, I believe, render them unfit for the average bee-keeper. Yet, just as individual animals in breeds of cattle are the best in the herd (I have seen among the Durhams a bull sold at $13,000, and another Durham worth barely $30.00), so we doubtless have queens and drones whose value is proportionately far apart. It requires a somewhat educated eye and mind to find the difference in value in Durhams; and it requires still greater education to find the difference in bees. It requires careful work that, I feel satisfied, a station under the government could assist us greatly in. I have known, as many another one has known, two colonies side by side, of about the same numerical strength, secure very different results during the honey season. In fact, it is not too much to say that one colony has been known to give us twice the result of the other, and we have been unable to assign any reason—all has been speculation. But we might as well say there was no reason for one cow giving twice as much milk as the other, as to say there was no reason for one colony securing twice as much honey as the other.

I do not hesitate to say that the time will come when we will pay greater attention to the length of the tongue of the bee and the size of the load it carries. We shall have instruments by means of which we can measure the exact length of the tongue of the bee; and, again, by means of fine scales we can weigh bees as they leave the hive in quest of a load; and, again, weigh them as they return, thus finding the bees which have the longest tongue and carry the heaviest load. The rapidity of work can also be estimated. Such work will probably never be undertaken first by private enterprise. The government must take this in hand first, and it could do much to help private individuals in their selection. Just as we in this country have a traveling dairy to go about to show the best methods of making butter, to advance the dairy interests, the time may come when it will be part of the work of an apiarist at an experiment station to select the best parents, the progeny of which shall be the material of the future, with which to carry on bee-keeping.

I have studied with interest Dr. Miller's article on heredity. It is a subject upon which the ignorant world about me (pardon me for the expression) considers me somewhat of a crank. I think the nurse-bees may have something to do with the traits of character of the bees they nurse, and still more the young bees they are with later in life. In the same way, although perhaps less, a child imbibes certain characteristics in its mother's milk. We know that anger, fright, passion, etc., will have such an effect upon the milk that it becomes poison; and if, taken at once, it will kill the infant, who would say that it may not have certain results, if in a less degree? But I have always looked upon example as more important in human training, as well as in the hive. First heredity, then example and surroundings, leaving out of the question divine power. The bee inherits certain traits—strength, activity, vigor—which lead it to carry out energetically that work for which it is best fitted; then the other bees influence their temperament to a certain extent. We know that, if one bee in a hive is angered, and emits the odor of poison, all the bees are angered; and, upon the same principle, it appears reasonable to suppose that, if young bees are brought forth in a hive, with those inclined to be angry, constant irritation in the hive will influence the young bees, and they too become angry; and, just as in man every time he allows himself to become angry it is still more easy to become angry the next, so with the bees; and, to a certain extent, such an influence rests on the hive for a time, but not permanently. I have again and again requeened vicious colonies—four last summer—with the result that, in time, their disposition has entirely changed.

I hope that your government will take hold of this question of selection in breeding. I had hoped ours would; but there is no use for ideas to be rusting. We should like to see our own country do best, but we are all interested in the advancement of bee-keeping, and would sooner see others advance our calling than not have it advanced at all. R. F. HOLTERMANN.

Brantford, Ont., Can., Feb., 1893.

WARMING OUR DWELLINGS BY MEANS OF HOT WATER.

SOME OF THE POSSIBILITIES IN A LINE WITH THAT NEW GREENHOUSE. BY A. I. ROOT.

Since I have seen the workings, month after month, through the severe part of our winter weather, I have begun to realize more and more the importance of my discovery; and I wish to suggest to those who heat greenhouses by means of flues, that, by running water-pipes into the flue near the fire, and having it come out close to the chimney, they can, without any expense, except that of the piping in the first place, have overhead heating by the hot water, as well as bottom heat from the flues. The hot-water pipes right under the glass answer a very important purpose by melting the snow so as to let the heat and light of the sun get through very much oftener than with the glass structure with no overhead heating. While I

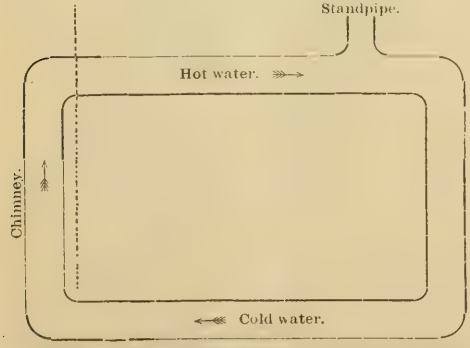
was pondering on the matter of using a similar apparatus for warming our dwellings, one of our subscribers made the following suggestion:

SAVING SOME OF THE HEAT THAT GOES UP THE CHIMNEY.

Now for invention. If "nine-tenths of the heat goes up the chimney, and only one-tenth is utilized for warming the room" (GLEANINGS, p. 31), can not this waste be utilized? It may be necessary that the gas from our stoves rise to the top of our houses while hot, in order to obtain a good draft; but then, why can it not be carried sidewise in a flue in the peak of the house in order that it may there impart its heat to *water* which is to be carried down to the lower part of the house, there to impart its heat to the air of the room? I know that the hot water running down would not force up other water from which the heat had been absorbed. Probably there are many other difficulties in the way of the practical working of this scheme, but a saving of nine-tenths of all fuel used in heating dwellings is no mean saving. If the wind or a windmill could be made to cause a draft, then the gas from the stove would not have to rise to the top of the house while hot, but could be drawn off after the heat had been extracted. B. D.

Eagle Point, Wis.

Friend D., you have struck upon a very important matter, without question. This surplus heat that goes up the chimney in almost every home *can* be utilized. Run your iron pipe into the bottom of the chimney, or, still better, into the stovepipe. Have it put up in such a way that it will come almost in the center of the draft. Then lead it out through the chimney at the point where you wish a room warmed. Make a coil of pipes, or let the water pass through any of the various cheap hot-water radiators now on the market; then carry it back to the point where it goes into the stovepipe or bottom of the chimney. Fix a standpipe at some convenient place, and the apparatus will run itself as long as you want it to run. The heat of the chimney will be sufficient to keep the pipes hot enough all night long, so there will be no danger of freezing and bursting, even if the fire does go out in the stove or stoves connected with said chimney.



ARRANGEMENT OF THE PIPES FOR HOT-WATER HEATING.

The diagram above will scarcely need explanation. Of course, the size of the pipe is greatly exaggerated in the diagram. The standpipe is simply to allow the water to contract and expand, as it does at different temperatures, and to allow the air that accumulates, to get out. If you live where there are town or city waterworks, this standpipe can be dispensed with, and a very small water-pipe may be let into the heating-pipes at any point. In fact, my apparatus didn't work well with a standpipe; but when I attached it to the regular waterworks, letting on a pressure of 20 lbs. or more to the square inch, it worked perfectly. I have never had any trouble with air collecting in the pipes.

When it is attached to waterworks, just open the valve a little so as to let water enough into the coil of pipes, and you can then draw hot water from your heating pipes anywhere you choose—upstairs or downstairs. My impression is, that it is a very easy matter to arrange it so the water will keep circulating. All that is needed is, that the temperature be a little higher along some point of the circuit where the pipe is ascending; and letting it run up inside of the chimney will answer admirably. The water becomes warm when it first goes into the chimney, and continues to get warmer and warmer. This makes it lighter, and therefore the warm or hot water rises to the highest point in the piping. Then it parts with its heat and becomes cool and heavier, and therefore falls to be heated over again. You can warm in this way a single room, or even a small corner of any room. As long as there is any heat in the chimney, there will be heat in the corner. When once started, the thing goes itself for ever—that is, where there is any fire to furnish heat for the chimney. There is no need of any valve anywhere, unless it is to stop the hot-water circulation when your rooms are too warm. If the weather turns colder, and you want a little heat, just open the valve, and off starts the hot water again, doing its work. My impression is, that, by a considerable coil or series of pipes so arranged that the waste heat that passes up the chimney shall come through them we may be able to utilize almost every bit of this waste product from our fuel; and hot-water pipes give us the gentlest, cleanest, and quietest way of heating, of any thing that has ever been invented. I say "quietest;" for where buildings are warmed by steam, pretty soon there is sure to be bumping, or pounding and hissing. The hot water is silence itself. I would suggest that your water-pipes be of galvanized iron. In that case I do not believe that the water inside, and the smoke, soot, and tar outside—that is, where they pass through the chimney, would ever have any effect on them at all. Ordinary black iron pipe is a little cheaper in the outset; but rust and corrosion would in time hinder its working, so that the galvanized would probably be cheaper in the end.

On Sunday evening, Feb. 19, we had a tremendous gale of wind and snow. I had decided to turn on steam in case the weather turned very cold Sunday evening; but some way I did not get at it; and on Monday morning, when I found the thermometer 5° below zero, I feared that my plants were all frozen up and the water-pipes bursted, for there had been no steam at all through the underground tile since Saturday night; and during Sunday night the wind blew a fearful gale from the north, with the low temperature I have mentioned. About 6 o'clock I started the little engine, but did not open the doors of the greenhouse until after breakfast. I was greatly fearful of the result; but every thing was all right, as it was Saturday night. The tomatoes and summer squashes looked as if it were the month of June. The water-pipes were doing their duty as usual. By the way, a friend suggests that my new model greenhouse must have been patterned after the ironclad ram Merrimac, of war-times memory. You will remember the Merrimac was covered with railroad iron, disposed in such a way that shot and shell would be deflected, and bound off without

doing any damage. Well, the new model greenhouse, it seems, bounded off the zero north wind in much the same way, and came through unharmed. If you have forgotten what it looks like, just turn back to page 26, Jan. 1,

DIVIDING VS. NATURAL SWARMING.

WHY MR. HEWES PREFERS TO PRACTICE THE FORMER IN CALIFORNIA.

In the early days of my bee-keeping experience, dividing (or artificial swarming) was all the rage among bee-keepers, and numerous were the discussions relating thereto in the bee-journals. To-day the subject is seldom mentioned in them, while the frequent allusions to the *how* of swarm management evinces that dividing is but little practiced by the best apiarists in the Northern States.

At this moment, among the prominent apiarists there who advocate dividing, I can recall but the names of the Dadants. Hutchinson in his otherwise most instructive book, "Advanced Bee-keeping," dismisses the subject in one short paragraph, in which he pronounces against it. In my experience, artificial swarming has proven much superior to natural swarming, and I can account for the divergence of opinion between myself and those who pronounce against it only by the differences of locality. As I understand the matter, in the Northern States the bees are released from their winter quarters about May 1st, and build up into populous colonies, and swarm at the beginning of or during the main honey-harvest. If this is the case, all well and good. The swarm will store an abundance of honey, while the hive which swarmed will gather some toward the end of the season, if it is prolonged for three or four weeks. But with us in California there is a moderate honey-flow for three months previous to the main honey-harvest, and most of the swarming takes place from two to four weeks before the opening of the season. The consequence is, when the honey comes the swarms are so depleted in numbers that they gather but little more than sufficient for their own needs, while the hive which swarmed with its young queen just beginning to lay, seems to busy itself with raising vast quantities of brood which will hatch at the close of the season, and be consumers instead of gatherers of honey. As a result of this early swarming, we have, at the opening of the honey-harvest, more hives with bees in them; but often the force which goes into the fields is very much smaller than that which went a month previous, when there was but little honey to gather.

Now, this three months of moderate honey-flow which occurs with us prior to the main harvest, while not conducive to our welfare if we let the bees swarm, is very advantageous if we divide, as, by making nuclei early in the season—latter part of March—we can build them up into strong stocks in time for them to gather much honey; and the old stocks, if they have been properly managed, will be ready for the harvest with a full force.

To sum up, division is best in those localities where a long season of moderate honey-flow precedes the main harvest; while natural swarming *may* be best in those localities where the harvest follows close upon the heels of spring. I emphasize "*may*," because I have found so many objections to natural swarming that I can not believe it is best anywhere. Principal among these objections is the serious loss which does occur from absconding swarms, and in the frequency with which the bee-keeper has to engage in the unpleasant occupation of disentangling numerous swarms which have united in one cluster. The difficulty of hiving swarms, too, when they have alighted high in some tree is another objection to the natural method; and the compulsory quitting of more interesting work to do it is another, which sometimes amounts to a nuisance.

Besides getting more honey by dividing, we can, by raising our young queens from only our best stocks, greatly improve the quality of our bees. I practice pretty much all the methods of dividing which are laid down in the text-books, and some which are original. No one method is best under all circumstances. I find that the raising of good queens, and making increase, requires more skill, care, and judgment than any other branches of bee-keeping; at the same time, there is no other work in which I take so deep an interest. While under the manipulations of an expert the advantages of dividing are certain and positive, an unskilled hand can do almost as much to make his honey crop a poor one as will a failure of the flowers to bloom.

I heard of a Louisiana bee-keeper once who used flour-barrels for bee-hives, and who tried making artificial swarms by sawing the barrels into two parts. Of course, it was not a success, but some of the methods practiced by movable-frame bee keepers result no less disastrously.

In poor seasons, with us it is suicidal to attempt division, as some of our bee-men have found out. For two years I have not divided a colony, but am in hopes that I shall divide many of them the coming season.

WM. G. HEWES.

Newhall, Cal., Feb., 1893.

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

HOW WE FIX THE CANDY FOR FEEDING.

In the spring, lay a newspaper on the floor or table, and form a box by putting square sticks under the edges of the paper. Pour in the candy; when cool, break it in pieces and put it into your basket, and go to your apiary and pull back the quilt from over the cluster; give a piece according to your colony, with the paper side up, and you can tell when it is gone by the bees carrying the paper around the entrance—that is, if they can fly.

J. O. LEINART.

Clinton, Anderson Co., Tenn., Feb. 22.

[Bees carrying paper out at the entrance would certainly indicate when the food was used up. A rather bright idea.]

A GOOD REPORT.

I have sold nearly $900 worth of honey the past winter, which I consider pretty good for an off year. My best returns was in 1889—nearly $2300 from 250 colonies. I have never had an entire failure since I have been in the business. My location is only an ordinary one—white clover, Spanish needle, and heartsease being the only flowers producing honey in any quantity.

Nauvoo, Ill., Feb. 27. E. J. BAXTER.

NOT A BEE-DISEASE, BUT OVERHEATED BROOD.

Friend Root:—Do you not think the trouble you mention in Aug. 15th GLEANINGS, last year, of dead brood that resembled foul brood, was overheated brood, as you say it happened in your hottest weather? Sometimes, I know,

nuclei standing in the sun, and not shaded, will have their combs melt down when there are but few old bees—not enough to ventilate the hive, especially if the entrance is small. We had some very hot days when it would seem all the bees that could be spared from feeding the brood and ventilating the hive were hanging out on the front, and under the hives.

Roseville, Ill. MRS. L. C. AXTELL.

[It is quite possible that you are correct. The colonies affected were not very strong. We will investigate more closely next summer, should the peculiar malady reappear.]

THOSE IMPROVED HOFFMAN FRAMES PREFERRED TO ALL OTHERS.

I have used some of the improved Hoffman frames (those that have the beveled edge on one side of end bar, and touch in no other place) during the past season. At present I prefer them to all others, and shall put in no others till I see some reason for a change. They are no more troubled with burr-combs than my common thick-top frames.

CLARK A. MONTAGUE.

Archie, Grand Traverse Co., Mich., Feb. 22.

HONEY ON A STICK, IN INDIA.

In conversation with Rev. D. H. Drake, who has been nine years a missionary in India, Madras being his headquarters, I learned some interesting facts in regard to some honey he found there. The natives brought it in for sale in considerable quantities. It was of a delicate straw color, and of fine flavor, but it was stored on the twigs of trees or bushes about ⅜ of an inch in diameter, and the honey which encircled the twig was about 2 inches in diameter, and from six to eight inches in length, each stick being apparently a perfect or finished comb. Mr. Drake did not learn any thing in regard to the bees which produced this honey, but it was stored in such a peculiar manner it must have been produced by a different kind of bees from any of ours. This honey was sold in that shape only in the vicinity of its production. It was at Udagerri Hill, Nellore District, India. It is in Madras Presidency, about 150 miles N. W. of Madras, at an elevation of 2700 feet, and the honey was eaten in May and June. Mr. Drake thinks that there is no doubt that further information in regard to those bees can be obtained by writing to a missionary who is located there, and would be glad to interest himself in the matter if requested to do so. His name is W. R. Manley, and address as above. J. L. HUBBARD.

Battle Creek, Mich., Mar. 2.

[Honey on a stick is a new thing to us. It seems strange that we have never heard of it before. Is there not some mistake? Will some of our missionary friends in the vicinity please enlighten us? We should like particularly to hear from Mr. Manley.]

OUR GOVERNMENT DISTILLERIES.

When any man or company wants to build a distillery, the government furnishes a plan; and when the distillery is ready to start, a government official unlocks the door; and when it closes for the day, he locks it up; and these locks on the doors and furnaces, and other parts of the distillery, bear the letters "U. S.;" and without such governmental supervision no distillery can run in the United States; and on every gallon of distilled spirits the government's share is at least four times the cost. Then the government builds warehouses at the expense of the tax-payers, to store the product of these distilleries in, to be kept to enhance their cash value. VOLNEY WHITE.

Findlay's Lake, N. Y., Dec. 23.

[In our issue for Nov. 1, 1892, page 811, in speaking of government distilleries, I asked the readers of GLEANINGS to set me right if any of the statements I had copied in regard to such distilleries were incorrect. A mass of correspondence came promptly, saying there was no exaggeration in the matter. Only one letter, however, was received, so far as I remember, saying that it was stated unfairly. This one letter contained the statement, "It is just as fair and just as truthful to say that the government runs your market-garden." Now, may God help me to avoid getting into any argument or controversy; but there is this difference: The government has never yet even volunteered to furnish any plans for the building of our factory or greenhouses. Perhaps if it had, we should not have made so many stupid blunders as we have made in years gone by. Neither has any government official ever looked us over, to say nothing about a lock on the doors. We have had liberty the most unlimited, to fix things after our own fancy. A tax-collector has, it is true, looked us over once a year; but he was so very accommodating and easy that I sometimes joked him about it; but he evidently had a good opinion of our honesty and integrity. Now, the statement in the letter from friend White troubles my mental and spiritual digestion. I was just thinking that it seemed as if I had eaten some green plums, and swallowed them, *stones and all.* I will tell you what *makes* me feel uneasy. When I looked over that very neat and pretty distillery—that is, if a distillery can be pretty—in Mogadore, Summit Co., O., only thirty miles from where I sit writing, I was astonished at the beauty of its buildings and its apparatus. I used to be something of a chemist, you know, and I think I can appreciate a handsome chemical laboratory. The beauty of the buildings, and the general tidiness of the whole affair, made me think at once of the work of some great corporation, not only with plenty of money, but with large experience. The apparatus seemed to have been devised and put up by some company that was acquainted with all modern improvements and progress in the art of distilling; and it was in a little humble backwoods town too. I am much more at home with nice chemical and mechanical apparatus than I am in the realm of politics. I confess that this whole matter of government management and government tax is out of my line; and, if you will excuse me, I will say, too, that government distilleries are out of *Uncle Samuel's* line of business. I *am* small, and unlearned in the matter of politics and government; but I am a citizen of the United States, and as such I protest. If my influence counts for any thing at all in this great nation of people, I should like to put my name down to a *vehement* protest against this whole thing. I should just like to see how long a string of names could be got up, to a demand that it be stopped. Once more: If friend White and myself have made a mistake, and got the thing wrong; if it is *not* true that the United States is showing our people how to build nice distilleries, warehouses, etc., and taking a share of the profits that amounts to *four times* the first cost of the liquor, then do, for Heaven's sake, tell us what *is* true. I do know that the beautiful distillery is over there in that little town in an adjoining county. How did it come there? As a *tax-payer*, I vehemently protest against having one copper of the money I pay in taxes being applied to the building up of such industries.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

THE FARMER'S LAMENT.

A friend sends us the following clipping from a newspaper:

I m sick and tired of hoeing, ditching,
And milking cows with tails a switching
In face and eyes;
There's little pay and lots of labor
In raising corn or taters, neighbor,
And fighting flies.

The farm and necessary fixtures,
To me are not such pleasant pictures—
Scythe, fork, and rake;
To tell the truth, I do not love them,
And, soaring far to realms above them,
My leave would take.

Oh for a season of refreshing!
Oh for a crop that's worth the threshing!
The farmers pray,
Until one's ready for his coffin;
Their dying words we hear so often:
"Farming doesn't pay!"

Well, I do not quite agree with the farmer who uttered the above lament. I am not tired of hoeing and ditching, at all; but modern progress has made the hoe to be almost too slow to be used very much. Our best cultivators, and Breed's weeder, have rather thrown it into the background. Of course, there is lots of labor with the corn and "taters;" but just now the pay is pretty good, especially on the "taters;" and the scythe, fork, and rake are the very things I do love; but the scythe, like the hoe, is rather too slow. There is one line in the last verse that rather redeems the poor old farmer, after all. If he could have a crop "*worth* the threshing," he might brighten up. And now, dear friend, pray do not get "ready" for that "coffin" just yet. I am sure there is lots of business that will pay tiptop, just before you. Why, just think of it! Our Medina people wanted some parsnips. We usually dig them almost any month in winter, here in Ohio; but we have had a freeze-up ever since just before Christmas; and those we put into the cellar were gone long ago; so we sent to Cleveland for a barrel, and they went off like hot cakes, at 5 cents a pound. The barrel cost us $3.00. Neighbor H. said that, if any one would guarantee him a market, he would raise parsnips for 10 cts. a bushel. I am not sure that I could do that; but I could, with very little trouble, raise an awful lot of them on that creek-bottom ground; and if parsnips, carrots, turnips, and roots of every kind, are put into the cellar, and covered with clean sand, they will keep almost as fresh and nice as they were the day they were dug, all winter long. Of course, the temperature of the cellar needs to be so near freezing that they will not sprout. Perhaps you say that raising root crops is not farming; but I insist that it is. If the towns around you won't give 25 cts. a bushel for your roots, they are worth almost if not quite that price, to feed out to almost any kind of stock. Just try your horses and cattle with carrots and parsnips in the spring, and see what they think of them. Then if you should have a winter like this, and everybody were ready to buy your crop at a dollar a bushel, or 5 cts. a pound at retail, how would *that* suit you, Mr. Farmer? It seems to me we have got a "season of refreshing" right here now, in a good many commodities; and there will always be a good market for nice stuff carefully put away, until there comes a season when somebody wants to buy.

USELESS DOGS AND HOT-BED SASH.

For years I have been paying a pretty heavy bill of expense in consequence of breakage of glass in our hot-bed and cold-frame sashes, by dogs walking over them. Of course, I mean dogs heavy enough to break a pane of glass. With the slatted glass sash, which I think promises to be of great use at certain times of the year, the dogs pretty nearly break up the business. Even a small dog stepping on those two-inch slats would break them. It is not alone the hot-beds either, for I have had big dogs walk up the sides of my greenhouse where the glass came over near the ground. When I remonstrated with the owners of the dogs, they tried to evade the question by asking what in the world the dogs wanted by walking on my sash. The explanation is this: Many dogs in winter time are not properly fed. In fact, a great many of them show by their looks and actions that they are half starved. Well, the rich compost we employ in our hot-beds, and even in our highly fertilized cold-frames, gives off an odor that must be in some manner savory to the hungry dogs, so they go nosing about the plant-beds and walking over the glass, especially when there is a little snow on the surface. If I were the only sufferer, perhaps the matter would not be worth bringing up; but I have heard several complaints from different localities. The letter below is right to the point:

Mr. Root:

Please send at once 1000 very earliest Jersey Wakefield cabbage-plants, 1000 White Plume celery. I have had bad luck with my first early plants owing to dogs breaking glass in my hot-bed at night and letting them freeze, so I order from you, as I believe you will send me none but A 1 plants; and I will transplant under glass as soon as they get here. S. H. BEAVER.

Seward, Neb., March 2.

You may say, "Why not get a gun and shoot the dogs?" Here in Ohio, and I presume likely in other States, any dog prowling around without his master may be shot according to law. But you know this is not a pleasant thing to do. The masters are often in the habit of going along the sidewalk while the dog is galloping through the adjacent fields. It seems to me the town council, or some official board, should take the matter in hand, and, for the general good of the community, thin off the useless dogs. Of course, the owners should be first notified; then if they do not take care of their dogs, they will have no reason to complain. There are good and sufficient reasons why a market-gardener should not go to shooting his neighbors' dogs. The old adage says, "People who live in glass houses should not throw stones." A spiteful neighbor might come in the night and smash more glass than his dog would in a lifetime. Besides, that is not the way to do business with neighbors, anyhow—at least, the teachings of Our Homes and Neighbors in this journal are not along in that line. I suppose, to sum it up, the question presents itself something like this: Which is of more importance to the commonwealth—intensive gardening or the dog business?

ONION-SETS—HOW TO RAISE THEM.

I suppose you have noticed that the prices of onion-sets seem to be running higher and higher; and almost every spring—at least for some years back—the demand has been greater than the supply, even with the tremendously high prices. Why, Peter Henderson, in his last retail catalogue, quotes them at *$2.50 a peck*, red, yellow, and white; potato-onions same price. I have been thinking, season after season, that somebody would raise so many that

we should very soon come back to old prices—50 or 75 cts. a peck; but it does not seem to come. The Landreths raise them by the carload, and quote prices by the carload; but they are now "sold out." I presume I have bought onion-sets from almost all large dealers who advertise them; but yet, with the *exceedingly* high prices, the quality has not been what it ought to be. The matter has been discussed in these pages already. Peter Henderson says they put theirs through a sieve or screen that takes out all more than ¾ inch in diameter. Other seedsmen, evidently, do not do this. You see, if we pay for onion-sets, and get them an inch in diameter, or more, even though we buy a bushel of sets we do not get a great number of onions. Another thing, so many have onion-sets that send up a seedstalk, I had about become disgusted, and was thinking of using onion-plants instead. In a recent number of the *American Garden*, they asked a great many leading gardeners about the new onion culture; and one or more of them say they can get *earlier* onions by planting sets. Well, if he had just the right kind of sets, perhaps he could. I think, however, it would depend on how large and strong his onion-*plants* were.

Well, why don't more people raise sets? And, by the way, there is considerable inquiry as to how to do it. Landreth says it wants a particular kind of seed; and they advertise seed specially grown for raising sets. Now, with all this preamble I have something pleasant to tell you.

When spring opened, and we had not any sets at all, and I didn't know where we could buy any, one of the boys who works for me said he had about a bushel.

"Why, Fred, where did you get a bushel of onion-sets?"

"I growed 'em."

"You grew them? Who told you how?"

"Why, nobody told me. I just planted the seed in the garden, and they grew."

Now, Fred had seen me *try* to raise onion-sets year after year; and during the past wet seasons he had seen me make more failures than successes; therefore, when he brought me a peck basket full as a sample I was a good deal astonished. They were the nicest onion-sets I ever saw in my life. They were from the size of a bean to half an inch in diameter—some, perhaps, a little more. They were firm, solid, well-ripened onions. There were not any thick necks nor any sprouts. They looked as if they expected to stay just as they were until somebody planted them in the ground. As we have had trouble in making onion-sets keep, you can imagine how pleased I looked when I saw his product.

"Fred, I will give you $5.00 a bushel for all the onion-sets you have got just like these, if you will tell me all about how you raised them."

He laughingly replied that there was not any thing to tell. You see, $5.00 is just exactly what we advertise them for in our catalogue; but I wanted some nice sets to send out to our customers who ordered a single quart by mail, and I think that all who receive a pint or a quart of these will feel they have got the worth of their money. At 20 cts. a quart there was not much margin left for me; but I got my pay in having the fun of sending *good* ones. Fred's plan was simply this:

Some time in May they made up beds in the garden 3 feet wide. The ground was not rich, because they had not much manure to make it rich. The onion seeds were sown broadcast, and raked in. It was sown so evenly and thickly that the onions could not grow big, even if they tried. The bushel was on a bed 3 x 18 feet.

"But, Fred, if you sowed them broadcast on your garden soil, it must have been a tremendous task to do the weeding; for if you waited till May, the weeds must have been up a little ahead of the onions."

"Oh! it was something of a job to pull the weeds out; but then, you see my sister—*she* did the weeding."

"Good for you, Fred. Such a sister as that is worth having. Of course, you gave her a part of the money?"

He nodded his head.

"Now, Fred, where did you get Yellow Danvers onion seed that produced such nice onion-sets as these? Was it some of the seed I sold you?"

He hung down his head a little, and replied, "No, I did not get the seed of you. I bought it of H. W. Buckbee, Rockford, Ill."

"But, Fred, why did you send away off to Rockford when we were selling onion seed right here—piles of it every day?"

A shade of embarrassment came over his honest face; but when I encouraged him to go on he replied, "Why, Mr. Root, Mr. Buckbee sent it postpaid by mail for 90 cts. per lb., when your price was $1.75."

I was astounded—that nice onion seed for growing sets, at 90 cts. per lb.! I asked him to bring the catalogue, and he did. In it I noticed that Mr. Buckbee says all his onion seed is grown by himself. This season he charges $1.75 per lb., because the crop is short; and if he blames me for putting him in the papers, I reply that it is just what he deserves. If he is going to raise onion seed that will produce such sets as that, and then sell it at 90 cts. per lb., not only should he be in the papers, but people should know all about it. Don't you think so?

A CORRECTION—$4.30 INSTEAD OF $43.00.

On page 182, where you quote from my letter, there is a little mistake. Instead of being $43.00 it should be $4.30. Of course, it is my mistake. I wrote hastily. P. O. THOMPSON.

Sidney, O., Mar. 7.

[Friend T., we are very sorry to have the wind taken out of our astounding story; but notwithstanding, we want to be right. Henry Clay once said he would rather be right than to be president of the United States; and we hope the readers of GLEANINGS, especially those who make garden, are as loyal to the truth as was "the sage of Ashland."]

OURSELVES AND OUR NEIGHBORS.

Why beholdest thou the mote that is in thy brother's eye, but considerest not the beam that is in thine own eye?—MATT. 7:3.

A few days ago our daughter Constance ("Blue Eyes") sent me a particular invitation to come out to Oberlin, where she is attending school, in time to attend a musical rehearsal to be held in one of the large churches in that college town, so particularly famed far and wide for churches, schools, and learning. I believe the Roots are fond of music. Most of them play on some instrument, and I believe they all sing, or try to sing; at least, they sing in prayer-meeting and Sunday-school, and are supposed to have at least an average ear for music. Carrie, our next younger daughter, accompanied me. The church was filled to overflowing. Constance remarked that, as the program was all classical music, she was afraid it might not interest me—at least, a good deal of it.

The first piece was a solo by a gentleman. He was German, and sang in the German lan-

guage. A lady played an accompaniment on the piano. I did not enjoy the piece very much. In fact, I was a little provoked to think that a celebrated singer should come before an American audience and sing in German. But music, you know, is the universal language, and so I expected that I could appreciate the music, if not the sense expressed in the words. To my surprise, however, I did not "catch on" to the music, much if any better than I did the German words. In fact, I felt a good deal inclined to criticise our brother, and to say to myself there was not any music about it, and to suggest that he was putting on airs, etc. Well, when that great crowd of men and women, boys and girls, encored him to such an extent that they almost insisted on his coming back and singing again, I began to get vexed with the audience, and to say to myself, "This is a new and fashionable sort of craze, and they all *pretend* they are pleased with such a senseless performance." Then I began to look around on the audience, and to study their faces. I think I have learned to distinguish an intelligent person by his looks—at least, to some extent. I was perplexed. The audience was composed mostly of young people; and a finer, brighter, and more intelligent lot of faces I think I never saw. Quite a number of them were Germans; and the real honest delight that shone forth from those German faces as they clapped their hands (as only Germans can clap), indicated beyond question that there was downright honest energy and enthusiam, and that it was probably myself that was lacking, and not the singer and the audience.

Then a German organist came on the stage. He was said to be one of the finest players in America; but I was disappointed again. He threw his whole soul and all the energy of his being into the performance. Not only his hands and face and the motions of his head, but his feet and his *knees* also, took part, and his body seemed full of inspiration; but it was all an unknown tongue to me, even though it did come from the organ. Many of the passages were difficult, without question. Once or twice I could catch a little glimpse of melody; but just as soon as I began to hope it would continue in that strain, or repeat it with some variation, both time and tune seemed to be absolutely jumbled up; and before I knew it I was working hard to scrape up charity, as in the former case, to have faith that he and the audience *knew* what he was doing. In this case such a storm of applause burst forth from that great audience, and that storm was kept up for quite a long interval (for they seemed determined to call him back), that I was completely dumbfounded.

After this, a lady came on the program—a distinguished pianist. I believe that, since I was of a very tender age—say three or four years old—I could understand women better than men. The sight of a cultured and intelligent woman is always pleasant to me, even if she does not sing nor speak; and I felt sure I should be able to understand at least a little of the next piece on the program. The woman was beautiful, and she looked smart and bright; but I began to be troubled almost at once, for she simply struck the instrument at long intervals; and the tones that it gave forth were not pleasant either. They were, to me, meaningless. I concluded that it was, perhaps, a sort of preamble that did not mean any thing particularly to anybody, and hoped she would get "down to business" after a while, and *play* something. It was all pretty much like the first, however. Once or twice there were a few chords, or perhaps a bar or two, that, by a stretch of the imagination, I could think might have some melody about them, if one understood the matter, and was familiar with this (to me) unknown language; but just as soon as I began to feel hopeful that I was "catching on" just a little, she just knocked it all over by getting shockingly out of time and out of tune. I remember of asking myself whether it were possible that *anybody* could beat time for such music; and I mentally decided that it must be a sort of music where *time* was pitched out of the window; and I was greatly tempted to say to myself that I more than half believed the *tune* was pitched out of the window also. And what did Carrie say to all this classical music? Why, she enjoyed it hugely. She admitted, however, when questioned closely, that some of the passages were beyond her comprehension and training; and she rather thought that one who understood it could beat time to all the music that evening. Shortly afterward I met a professional teacher who has for years drilled the juveniles in our Medina schools in music. I have mentioned him before in these pages. In reply to my inquiry he said, "Why, to be sure one could beat time to every piece of music that was played during the evening. It was all right—every bit of it. The only trouble is, you were unfamiliar with it."

During the latter part of the performance the Oberlin Glee Club sang some pieces. The harmony and beauty of so many trained voices was plain enough; but the pieces were all something I had never heard before, and therefore I could not enjoy them *very* much. Oh how I *did* long for just one strain of Old Hundred, or something from the Moody and Sankey Hymns;—just a little glimpse, if nothing more, to remind me of something I could recognize. I did not get it, however, and so the great concert, that seemed to awaken such enthusiasm among hundreds of educated and intelligent people, was to me almost a blank. I fell to wondering once or twice whether it were not my duty as a Christian to applaud just a little with the rest; but, even though Paul did say, "I am become all things to all men," I did not feel that I was called upon to applaud something that I did not understand. I could express my satisfaction at the performance of the glee club; and when the Oberlin Football Club came on to the stage with their playing uniforms, and sang something, the words of which were full of comical pleasantry, I felt that I could applaud then, even if the music were still unfamiliar.

Now, friends, why do you suppose I tell all of this? Why have I needlessly "trotted out" my ignorance and my lack of musical training, or ear for music? What is the point, any way? Why, it is this:

I did not enjoy the concert in *one* sense: but in another sense I *did* enjoy it, because it seemed to me as though God in his providence was teaching me a great lesson. You remember the time when Peter was taught that great object-lesson by a vision that came down from heaven. At first he rejected it, and said, "Not so, Lord." But the angel replied, "What God hath cleansed, call not thou common." Suppose that, in my stupidity, I had said to myself, "These people on the stage are all a pack of idiots. They *know* there is not any sense nor music in all this folderol;" and suppose I had, furthermore, said that that great audience of people, mostly scholars, many of them graduates, probably, were *also* a pack of idiots, and that they *pretended* they were pleased just because it was a new thing, and *fashionable*. I was greatly tempted to say something of this sort, but, thank God, a little streak of common sense was left to me—enough to overcome my preposterous egotism. Grace enough was given me to say, "If there is any idiot at all in this whole assembly,

it is *A. I. Root* and nobody else." You see, I was called out of my regular beat, a little out of my line of work. I was in a new atmosphere, and among a class of people with whom I had had comparatively little acquaintance; and, dear friends, with all the great lines of progress in science and art that now surround us, we run into this thing quite frequently. Oh how my heart has been pained to see uneducated people criticise and sneer at those whom they might chance to meet, with education and intelligence: yes, and my heart has been sadly pained to see hard-working poor people look upon those who were more fortunate than themselves, in just the way I was tempted to look upon and judge those I saw at that musical rehearsal. Several of my friends suggested that I could easily cultivate a taste for classical music; that, if I were to take time and pains, I could very soon see a higher order of melody in what I was tempted to call a senseless performance than I had ever got a glimpse of before. Perhaps this is true; but even if it were not, we are not all alike. Individuals in the same family differ widely. I have told you before that I am partially color-blind. When a carriage full of people look out upon a cherry-tree, as we are riding by, and all utter exclamations of surprise because of the beautiful red cherries lurking among the green leaves, suppose that, because *I* can not see any red cherries at all, I should declare there are none. What sort of person would I be? And yet I have sometimes been almost vexed because my own children, two or three years old, could see cherries where I saw none.

In this matter of *capital and labor*, I suspect many of the troubles and want of charity come along in the line of our text. Somebody, or some class of people (it is a good deal sadder to see a *lot* of people going wrong than simply one individual), who do not see nor understand some new development with merchandise and factories, etc., will declare it is a plan to cheat and defraud the public. They look on it from *their* standpoint. They not only lack charity, but they lack intelligence and education, and they push ahead, insisting that they are the only *honest* people in the world. The ones they censure so severely, perhaps, are kind enough to try to explain; but no explanations will be received; and this way of severely judging others, often results in mobs, riots, and bloodshed. May God help us!

Again, good people lament that their boys—aye, and girls too—will not stay on the farm, when the fault is entirely their own. T. B. Terry, or somebody else, tells of a young farmer whose father was well-to-do, who had determined to become a telegraph operator. His father and mother urged him to stay on the farm, telling him of his future prospects; but the boy could not be turned. Finally the father asked the advice of a mutual friend. The result of the advice was, that the next morning the old farmer took out a roll of bills and handed it to the boy, and said: "Look here, John. Before we begin our spring's work we want another good stout horse. Now, I believe you can buy a horse just as well as I can, and may be better too. You probably know where the good horses are. Suppose you try your hand at it." The boy took the money mechanically, but stared at his father in open-mouthed wonder. What in the world had happened, or come over the old gentleman to make him do such an unheard-of thing? Off went the boy, feeling several inches taller to think that he was finally, for the *first time in his life*, intrusted with *money*, and sent off to do *business* without even having his father along. They did not get him for a telegraph operator at all, and in a little time he showed the old gentleman that he could beat him right along in modern farming. Of course, he made some blunders, and had to learn by experience.

The Roots are given to hobbies. Your humble servant has ridden more hobbies, and pushed them day and night, up hill and down, summer and winter, perhaps, than any reader of GLEANINGS; and when he is astride one of these hobbies, he can not very well *see* any thing else. Why, just a few months ago I refused to look at a wheel, and refused to believe I had strength or time to ride one. I went around grunting with my aches and pains, and would hardly listen to Ernest, nor even *consider* the matter. Yes, I remember, too, when I thought this wheel craze was a big nuisance—they hadn't any business on the sidewalks; and I don't know but I almost thought (without thinking or considering the matter) that they had no business *anywhere*. What a stupid blunder I was making! Well, the *young* Roots are given to hobbies. Just now Huber is bent on making maple sugar from three trees that are down near the toolhouse. He has borrowed a kettle, and is preparing to hang it on a pole. He has also collected rubbish from all over the neighborhood, and stood it up in the sun where it will dry. I told him the sugar would cost him a dollar a pound, and that it would not be good, even then. But, notwithstanding, that is just the principal thing he wants to do. Miss Constance, who invited me to come to Oberlin, never showed any particular tendency to get crazy after any thing until she was almost twenty years old. I felt sure it would come sooner or later, and was watching to see what direction her enthusiasm would take. Well, she has found her mission—I believe that is what she calls it; and she is just as certain as I was, when I went chasing after hobbies, that she will follow it "all the days of her life." You may conjecture that it is music. Well, it is *one* kind of music. If it had been vocal music or a piano, or even a guitar, we might have been at least tolerably reconciled. But, what do you think? Why, her whole heart and soul are absorbed in taking lessons on the *violin!* We thought it would last only a few weeks; but it has lasted almost a year, and she thinks she has as yet only a glimpse of the wonderful possibilities beyond. First, she took lessons of the best talent here in Medina; now she has taken several terms of the leading professor on the violin in Oberlin. Some of you who are behind the times, like myself, may inquire, "Why, is she going to devote all her life toward learning to fiddle for dances, theaters, parties, etc.?" It seems we are all wrong. I do not believe that, in all the fiddling she has done, week in and week out, sometimes practicing several hours a day, she has ever yet fiddled a dancing tune. If she has, I have never heard of it. It is all exercises, and the exercises are very much in line with the classical music that is almost Greek and Latin to your humble servant. She wants a violin worth a hundred dollars or more; then she wants to keep on taking lessons as long as Oberlin can give her assistance. But this is not all. After that she is to be trained under the city masters, and may go to Europe to perfect her studies. Of course, I talked with the professor about it, under whom she is taking lessons. He said she had shown more progress in a short time than any other pupil, except one, who had ever been under his care. He has now over forty pupils, and has taught violin-playing for more than twenty-five years. That is his business, and nothing else. Said I:

"But, my dear sir, what is to be the outcome of all this? What is she going to do with this musical education that takes so much time and

practice—in short, what has become of that one pupil you mentioned, who made more progress than she did?"

I can not remember the exact reply he made, but it was something like this:

"That one pupil, after she left me, availed herself of the best masters America afforded, and then she went to Europe to graduate; and now she gets a salary so high up in the figures I would hardly dare mention it."

"But, my dear sir, does she not get this great pay by playing for theaters? and is she not obliged to go among classes whose society we might at least call questionable?"

"Oh, dear! no. They pay her great sums of money to play before the finest, most intellectual, and best audiences to be found in the largest cities in the world."

"Mr. B., I have been told you are a Christian." He smiled, and nodded his head.

"You have over forty pupils now, and have been engaged in just this kind of work for years, and yet regard it as worthy of the time and attention of the best people in the world. Well, I think I know a little more than I did yesterday. I thank you for your kind counsel and advice."

I presume likely *many parents* are reading what I have written here; and perhaps they are deeply interested. Perhaps some of them may say, "Well, brother Root, what are you and your good wife going to do about it?"

We have done this: Constance has already done some work in the office; she knows how; and if you want to see a Root work up to his best, you want to see him have an *object* in view, just ahead of him. She is going to help us in the office, so that she may have that violin that is so dear to her heart; and then she is going to *work* her way through so that she may be able to go on of herself, or, at least, without letting her father pay *all* of the expense. She is, as I was saying, through her own exertions, going to push ahead in this (to us) singular line of choice. While at her boarding-place, our host (he used to be a beeman), who boards and lodges twenty young students, told me the following story:

A well-to-do German moved to Oberlin in order to educate his children. A daughter of his made remarkable progress; but the demands on the father's purse were much greater than he had anticipated. But she was smart, and the father was proud of her; and, altogether, he expended $800 in giving her a good substantial education. So far, so good; but just at this crisis some presuming young man took a shine to the smart daughter, and—they got married. Her father was in the habit of telling the sad story to his friends, and he would always wind up with something like this:

"After I had paid out $800, and given her all this education, she went and got married. Just think of it!"

At this crisis, the friends who hear his sad story usually laugh uproariously; but the poor father can not see where the laugh comes in. He evidently seems to think that it is $800 thrown away. Now, dear parents who look on these pages, be careful that you do not fall into the error of our good German friend. Let us have faith in education; let us have faith in these children who are growing up or have grown up around our hearthstones. Let us remember that it is *the great God above* who has given us these singular likes and longings; and when we perceive that some one of them has a rare and unusual (and perhaps unlooked-for) gift from God the Father, let us not lose faith in them; and let us not lose faith in the great Giver of all good, who has seen fit to create us with so much alike and yet so *un*like.

GLEANINGS IN BEE CULTURE. A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS. ILLUSTRATED SEMI-MONTHLY 36 PAGES 7×10 $1.00 PER YEAR

Judge not, that ye be not judged; for with what judgment ye judge, ye shall be judged.—MATT. 7:1.

THE Crane smoker is nearly perfected. Dr. Miller, to whom we submitted a sample, says, "That double-acting valve, so simple and effective, is a stroke of genius. * * * * As nearly as I can tell without using it [the smoker] a whole season in the apiary, I believe you have the best smoker ever gotten up."

BY the way the goods are going off, it is evident that there is much faith in next season. We have not had a good cold winter for some years. Who knows but that a good cold snapping winter, such as we have just had, when the ground has been covered with snow a large part of the time, is just what the clover needs to make it yield honey? Our winters have of late been peculiar, and so have our honey seasons. Let us hope that an extraordinary winter may bring an extraordinary flow of honey. But don't let our "hopes" cause us to invest unwisely.

WE are all "broke up." We have been sitting before the desk *trying* to scribble off an editorial, as it was one of the kind that *wouldn't* "dictate." We've got something to say, but for the life of us we don't know *how* to say it or whether, indeed, we ought to say any thing at all. We refer to some kind, very kind things said of us in a biographical sketch, accompanied by a good portrait, in the *American Bee Journal*, of your humble servant. We seriously fear we do not deserve all of it; at all events we tender our awkward "thank you," and in the meantime will try to ward off that peculiar insidious malady that sometimes affects young men—the "big head."

THE Edison phonograph, which we placed in the office about a year ago, has proved to be a grand success and a great aid to the office. So valuable was it that we have recently put in another. Besides enjoying of an evening occsionally the pleasure of hearing choice music from world-renowned artists, we are enabled to clear up nearly all our correspondence every day. Before the days of the phonograph, our letters—at least some of them—had to lag simply because we could not get to them. The machines take the records evenings or at any time of the day most convenient, or when we can "get to it." They are always ready, and never get sick nor married. The dictated records are transcribed on a Smith Premier typewriter, the best business typewriter, in our estimation, of any writer on the market. These machines had such decided advantages over our old standard Remingtons that we replaced the three in the office for Premiers. As we have had some inquiries relative to our correspondence, perhaps the above will answer for all, and it is certainly a pleasure to us to be able to add our testimony to the value of these labor-saving devices.

N. B.—Matter for GLEANINGS, at least the greater part of it, is given to our old standby stenographer, "W. P."

CERESIN FOR FOUNDATION.

LOOK here, Dr. Miller; did it never occur to you that your second straw in this issue might turn out like one of the celebrated straws that

broke the camel's back? Such a quotation as you make, it seems to me, savors of heresy; and haven't we had heresy enough for a month or two back? I hereby caution any American, or German either, against undertaking to make foundation with the least particle of ceresin mixed with the wax. I obtained specimens of the substance from different markets, and I think I tested the matter thoroughly. Even the least admixture of ceresin, paraffine, or any other substitute for beeswax that has ever been found, will surely cause the combs to break down during the extreme heat of the summer. I once thought the thing was going to work nicely, and even put it on the market, as you may remember. It did work nicely until the hot weather came; and some of us had such a sad experience we thought we would remember it for at least fifteen or twenty years. Will some of our German friends sift this matter? If that item about 40,000 lbs. is a canard, like the machine-comb honey, it wants to be nipped in the bud before it goes a step further. Now, doctor, do you see what you came pretty near doing? A. I. R.

WINTER LOSSES AT MEDINA.

WE have had a very severe winter, as you know; and so far it has been very severe on the bees; and the worst part of it is yet to come, if we may judge by former seasons. It is only by keeping account of our errors that we are able to arrive at perfection.

We went into winter quarters with 150 colonies. A careful examination at this date, March 10, shows that 30 colonies, or 20 per cent of them, are dead. Not since the terrible winter of 1880–'81 have we been obliged to record a greater mortality than 5 per cent, with the single exception of the winter of 1890–'91, when we lost 15 per cent of those outdoors. But during that winter we lost only 2 per cent in the cellar. It is pretty evident, that, if a large proportion had been wintered indoors this year —they are all outdoors—our percentage of loss would have been greatly reduced. Last fall, for experimental purposes (as we have before announced), we prepared our bees in several different ways. Nearly half were under sealed covers; and the rest were under the old absorbing cushions. Now, here are the figures for the percentage of losses up to date:

Of the 37 put into small chaff hives with sealed covers, 26 per cent have gone up; of the 51 put into winter cases, 17 per cent are dead; of the 57 in old-fashioned chaff hives, with absorbing cushions, 10 per cent fail to respond; of the 5 in the house-apiary, *all* are dead.

We want the truth to come out, no matter if it does demolish some of our pet hobbies in regard to wintering; and from the above report it would look as if the sealed-cover idea had received an "awful black eye;" and we presume that our friend C. P. Dadant, as soon as he sees this, will throw up his hat, and shout back toward Medina, "I told you so." Now, look here, friend C. P., we are not going to give up just yet on sealed covers; for we *think* we see where our mistake was made. We have held, for a few months back, that lots of packing was not so necessary above and around covers that were sealed, and accordingly used very much less; but we take that all back now. Bees must have just about as much packing on one plan as the other. Again, on account of the late feeding, about half the supposed sealed covers were not sealed, because it was too cold for the bees to do much of that work.

There is another factor that comes in; and that is, that our colonies were fed much later than usual, and the winter, coming on much earlier, caught us in rather bad shape. This is a rather bad confession to make, when the advice given in our catalogue, and through the columns of GLEANINGS, has been to prepare for winter *early*. But you know how it is, where colonies have been running to their highest notch in queen-rearing; and uniting a lot of queenless nuclei never makes a good and satisfactory colony. Perhaps 50 per cent of our bees were of this sort. This, together with the late feeding and severe winter, gives us a rather bad showing.

Reports show that bees in the cellar or in special repositories are wintering nicely; and while reports from those outdoors show nothing like as bad a state of affairs as in the winter of 1880–'81, the losses for outdoors are heavier than usual. Up till this winter we have been having from 33 to 50 per cent of our bees in the cellar; but last fall we put in a furnace, and Mrs. Root wanted the only available bee-cellar for the storage of vegetables. We thought, therefore, we would try them all outdoors. It is a pretty safe way to winter both ways. During very severe winters the advantage is in favor of those in the cellar; but in warm winters, or in milder climates, they are better off outdoors.

PUNICS—SHOULD THEY BE INTRODUCED INTO THIS COUNTRY?

THE editor of the *Apiculturist* thinks we are unfair, because, he says, we publish only testimonials that are against the so-called Punic bees. Having seen only two favorable reports, outside of those interested in their sale, both of which we published, it seemed to us that we were giving them their fair measure of justice. Speaking of fairness in giving of both sides, it is a little singular that Mr. Alley publishes of late none of the *adverse* reports regarding those African bees. Is it quite fair on *his* part to be so one-sided? or is it fair to say that the testimonials from good reliable correspondents are untrue, because they differ from him? And, again, he says, "Nearly every issue of this paper [his own] has contained one or more letters, *unsolicited by us*" (the italics are ours), "from those who have Punics, and nearly all speak in the highest terms of them." We were astonished at this statement, and proceeded to go carefully over the last 12 months of the *Apiculturist*. Now for results: Instead of finding "one or more unsolicited testimonials in nearly every issue" we found only five for the whole year, that could be considered as in any wise favorable, outside of those who are interested in their sale. One of these reports was ours, given early in the season; and, as our readers know, we have since had reason to reverse our opinion. Two more of these reports were given very cautiously, the writers being unable at the time to give a decided opinion, although they *thought* the Punics promised well. This would leave *really* only two favorable reports; and it is quite probable the writers since, after further experience, have had good reason to change their minds. First impressions are by no means correct, as we all know. If Mr. Alley will give us the pages where in "nearly every issue . . . . one or more unsolicited testimonials" will be found, it will give us an opportunity to correct ourselves, if wrong.

We admit that we have published a good many unfavorable things regarding Punics. One of them came from a breeder, H. Fitz Hart, who advertised Punic queens early in the season; but after he had given them a careful test he pronounced them the "biggest frauds," and added that he could not advertise them further, and accordingly withdrew his advertising—see page 817, Nov. 1st. Another one, J. S. Clock, Urban, Pa., who advertised the same

bees on page 559 of our issue for July 15, expecting to advertise them right along, after one insertion of his advertisement, requested us to take it out, as he would not be willing to stand the complaints that would be almost sure to come from such bees, because his own Punics, as in our own case, were behaving very badly. When two of the queen-breeders who once thought favorably of the Punics cease to advertise them; when three competent bee-keepers—Benton,* Baldensperger, and Cowan, having handled them in their native land, pronounce against them; when nearly all reports outside of those interested in their sale, at home and abroad, are decidedly adverse; and when careful tests in our own apiary were unfavorable to the bees, we can not think that we have been unfair.

But this Punic controversy is getting to be tiresome, and we propose to have nothing more to say on the subject for the present. We regret very much to take as much space for this as we have, and would ignore it as we have other "flings" in the *Apiculturist;* but in this case we felt so sure that the introduction of Punics into apiaries of other good bees would do great mischief, that it was a duty we owed to the fraternity to set forth a few facts. If Mr. Alley proposes to push the sale of this kind of bees, in the face of these facts, we have nothing to say.

P. S.—After reading the foregoing it occurred to us that some one might think we had an "ax to grind;" viz., that, in order to boost the Italians ahead another notch, we must necessarily kill the Punics. Such was far—very far—from being the case. Early last season there was a time when the Punics *promised* well, and we actually went so far as to obtain the names of a couple of resident bee-keepers who could import the bees direct from North Africa to us. If the bees had subsequently behaved themselves we should have imported them direct and sold them.

KIND WORDS FROM OUR CUSTOMERS.

I would not do without GLEANINGS, even if it cost two dollars. LUCINDA RITTER.
St. Joseph, Mo., Feb. 25.

The augite mat is all right—the best thing invented for woman, since the cooking-stove.
Hendersonville, N. C. MRS. S. A. GURLEY.

I like the 8-frame Dovetailed hive with thick top-bar Hoffman frames, exceedingly well; the frames are easy to handle, and there are no burr-combs.
Carpenter, Ill. EDW. SMITH.

I used your seeds last year, and they gave the best satisfaction of any I ever purchased. The packets contained more seed, and it all grew nicely.
Beauford, Minn., Feb. 3. J. N. WADDELL.

I have tried your Daisy foundation-fastener, and, sure enough, it's a daisy and no mistake. I am not an expert yet as to speed; but when they are once in they are bound to stay. S. FARRINGTON.
Corunna, Ind.

My supplies were received on the 27th. I am entirely satisfied. The foundation beats any thing I ever saw. It looks so nice and pretty I hate to use it. R. U. JONES.
Dyer, Tenn., Dec. 30.

Each member of the family at our home was asked to give a list of the papers he wished for next year. When the lists were handed in, GLEANINGS was found at the head of each. M. HAWKSWORTH.
Medina, Ont., Can.

I received my goods, and find every thing all right. I am pleased with the goods, and also thank you for your prompt attention and honest care.
Mohnstore, Pa. GEO. G. LESS.

I got 30 hives from a firm in —— that make the Dovetailed, but they are such poor things I will not use them. The hives I got of you last spring are perfect, I think, and so do my neighbors.
Brazil, Iowa. CHAS. LAWRENCE.

Mr. Root:—Since writing you this morning, inclosing draft, goods have come, and, so far as examined, I find them simply *perfect.* What surprises me is, how you can do so much work and furnish such material as you do for the prices you charge.
Washington, Ind., March 13. J. A. SCUDDER.

I prize GLEANINGS as much as or more than any other paper I take, even if it is published away off in Ohio, where I never expect to be able to go. How much I should like to shake the hand of the editor, no one knows but the humble writer. R. C. ROUSE.
Hookerton, N. C., Feb. 8.

Editor Gleanings:—You little know the exquisite pleasure I take in reading the many good things that come to us through our ever welcome visitor, GLEANINGS. Especially, Mr. Root, do wife and I enjoy "Ourselves and Our Neighbors," as they are so friendly and confidential. May God in his wisdom reward you.

Yes, I too am a bee-keeper, and, of course, think a great deal of my pets. I was the first one in the neighborhood to adopt a frame hive, and my venture was looked at askance by many, especially by my aged father, who predicted the direst calamities, but they haven't come yet, as my bees are doing as nicely as possible. By the way, I should have lost a $1.50 queen had it not been for GLEANINGS. I purchased a queen from you very early (in April I believe), for a colony that lost its queen during winter; but when she came, the colony was so reduced it seemed next to impossible to save them, and in the nick of time I remembered "to remove a stronger swarm, set the weaker one in place of it." The first time I did this I chose a moderately strong swarm and set the weak one in its place. This was to guard against killing the queen. This strengthened them considerably. I then moved a very strong swarm and placed them in their stead, when, presto! my hive was just booming, and soon after actually cast a fine swarm and gave a surplus of 20 lbs. of comb honey. I regard this as doing pretty well for a beginner during a season when anybody's else bees hardly cast a swarm. So much for a good bee-paper.

The thick-top frames are perfection with me, as no burr-combs at all are built on them.
Odin, Mo. D. B. THOMAS.

* Benton, at the Washington convention, stated that the temper of the Punics was ten times as bad as that of the Cyprians.

EGGS for Early Hatching. To those who wish to raise Silver Laced Wyandotte hens I can furnish eggs this year at $1 for 13, or $1.75 for 26 eggs. These eggs are from pure-blooded fowls that have been finely bred. J. S. MASON, Medina, Ohio.
Reference, A. I. Root.

A B C OF
STRAWBERRY + CULTURE.
A ‡ BOOK ‡ FOR ‡ BEGINNERS.
BY T. B. TERRY.

This is Terry's latest and best work, and has received some very high words of praise. Who that keeps bees does not also have a little garden-patch? If you would learn to raise in it that most luscious of all fruit, the strawberry, with the best results, you can not be without this little book. Even if you don't grow strawberries you will be the better for reading it. Pages one-half size of this. Fully illustrated; 144 pages. Price 35c; by mail, 40c.

A. I. ROOT, MEDINA, O.

FRIENDS,

I have a fine strain of Italian bees, and my apiary will be located six miles from other bees, so perfect mating of queens is assured. Will be pleased to receive your orders. Prices are as follows:

1 untested queen,	$1.00	6 untested queens,	$4.75
3 " "	2.75	12 " "	6.50

Tested queens, each, $1.50.
Safe arrival guaranteed. Address

FRANK H. HOWARD,
6-8-10d GARDEN CITY, KANSAS.
Please mention this paper

Jennie Atchley

Is headquarters in the South for queens. Untested (either 3 or 5 bands), March, April, and May, $1.00 each; $5.00 for six, or $9.00 per doz. June and after, 75 cts. each, $4.25 for six; $8.00 per doz. Prices for breeders, and by the quantity, on application. Safe arrival and satisfaction guaranteed.

Jennie Atchley, Greenville, Hunt Co., Tex.
Please mention this paper. 6-7-8d

SUPPLIES.

Large illustrated catalogue free; or send 10c in stamps for *THE BUSY BEE*, a book telling how to manage them.
WALTER S. POUDER, Indianapolis, Ind.
4-12db 175 E. Walnut Street.

BUY your **HIVES** where lumber is cheapest. That's at LeSueur, Minn. Catalogue free.
5tfdb **F. C. ERKEL.**

SOLID COMFORT PLOW. Little used. Take $30.
6-7d J. H. COLVILLE, Goshen, Ohio.

A large number of fine queens on hand; yellow and prolific; ready April 15th; warranted queens, $1; 6 for $4.50; select tested, yellow to the tips, suitable for breeders, each, $2. Reference, A. I. Root. 3tfdb
W. H. LAWS, Lavaca, Seb. Co., Ark.

5=BANDED 3=BANDED BEES.

Nucleus colonies. Circular free.
3-8db J. F. MICHAEL, German, Darke Co., O.

Eastern Supply House.

We furnish every thing used in the apiary, and at bottom prices. Illustrated circular free.
I. J. STRINGHAM, 92 Barclay St., N. Y.
21-20db Please mention this paper.

Cash for Beeswax!

Will pay 23c per lb. cash, or 26c in trade for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 29c per lb., or 33c for *best selected wax*.

Unless you put your name *on the box*, and notify us by mail of amount sent, I can not hold myself responsible for mistakes. It will not pay as a general thing to send wax by *express*.
A. I. ROOT, Medina, Ohio.

BUFF Cochin. BRAHMAS, Light. BEES, Italian.
Circular. 5-10db E. SHIMEL, McCuneville, O.

BEE-KEEPERS, NOTICE.

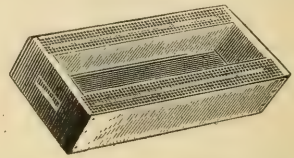
Send to E. J. SHAY, Independence, Preston Co., W. Va., for catalogue of Apiarian Supplies. 4tfdb

READY AGAIN!

With those nice Golden Queens, reared by Doolittle's method. Untested, March, April, and May, $1.00; 6 for $4.75; 12 for $8.50. June and later, 75c each; 6 for $4.00; 12 for $7.50; 3-banded tested, $1.50. For select and breeders, write for prices. Safe arrival and satisfaction guaranteed. 5tfdb
J. B. CASE, Port Orange, Vol. Co., Fla.
☞In responding to this advertisement mention GLEANINGS.

A. E. MANUM'S LEATHER-COLORED ITALIAN QUEENS

Are superior to all others for business, is the verdict of those who have them. PRICES: one untested, $1; six, $5.50; twelve, $10.00. Tested, $1.50 each. Selected for breeding, $2.50 each. One yearling, tested, *in June only*, $1.00; six, $5.50; twelve, $10.00.



THE MANUM FEEDER.

Models of Manum's new "Rapid" feeder with full printed directions how to make, and what, when, and how to feed for best results, $1.00 by mail, postage paid. Descriptive catalogue mailed free on application. 5-12db
A. E. MANUM, Bristol, Vt.
☞In responding to this advertisement mention GLEANINGS.

Beautiful Golden Queens.

My five-banded Italians are bred from the very best of stock by Doolittle's improved methods, and mated to the yellowest of drones from selected colonies, and I guarantee them to give entire satisfaction. Untested queens are all warranted purely mated. 1 untested queen, March, April, and May, $1.15 each; $12.00 per doz. Tested, $1.50 each. Select Tested, $2.50. Guarantee prompt and safe delivery. Send for circular. **W. P. CROSSMAN,**
Money-order office. **Ballinger, Tex.**
Reference: 1st Nat. Bank of Ballinger. 5tfdb
☞In responding to this advertisement mention GLEANINGS.

WE OFFER COMB FOUNDATION

WHOLESALE AND RETAIL,
AT VERY LOW PRICES.

Satisfaction and all work guaranteed.

We have ordered our mills, etc., and expect to be able to fill orders in a few weeks. We will arrange for a large capacity, and devote all our time to the business, so orders can be filled promptly. Our prices will be at least from 5 to 10 cts. per lb. below the prevailing prices of other years. We expect our foundation to equal other makes, and to excel them all in a few respects, to which we call your attention in our price list. 5-10db

BEESWAX WANTED. Write for prices.

W. J. FINCH, JR.,
931 E. Monroe St., **Springfield, Ill.**
☞In responding to this advertisement mention GLEANINGS.

FOR SALE

280 acres of timber land; cleared, 25; orchard, 10. Three never-failing springs; large barn; cellar 38x16, house enclosed. Good location for bees. Address
MISS MARY A. WOOSTER, Van Buren, Ark.

Oregon and Washington Bee-keepers

We have decided to give a

BIG DISCOUNT

for early orders. Write for special prices, naming quantity you can use.

POSSON'S SEED STORE,
Portland, Oregon.

6-9db

Dr. J. W. Crenshaw, Versailles, Ky.

Breeder of Italian Queens. Imported or home-bred mothers, as desired.

Untested, till July 1, $1.00; after July, 75c. Contracts solicited. **Dealer in A. I. Root's Supplies.** Grower of plants of every description. Onion Plants. Celery Plants. Send for circular. Mention GLEANINGS.

5-14 db

CONCORD GRAPEVINES.

Strong, thrifty Concord grapevines, for shading bee-hives, or for other purposes, 10 cts. each; 85 cts. for 10; $6.50 per 100. If sent by mail, add 5 cts. each extra. Those sent by mail are only one year old, for the larger ones would be too heavy. The others are *three years old*, and have extra strong large roots. If over 50 vines are wanted, they had better be shipped by freight. There is not a bit of risk in sending grapevines by freight, for they can be packed so as to keep safely a month, if need be, if they are ordered early in the spring.

Send orders to **DR. MARTIN,**
Rising Sun Nurseries, Mercersburg, Pa.

5-6-7-8d Please mention this paper.

---

5 BANDED QUEENS, 3 BANDED QUEENS, SUPPLIES of all KINDS.

Eggs for Hatching from B. Plymouth Rocks and Brown Leghorns. Discount on early orders. Catalogue free. **CHAS. H. THIES,**
5tfdb **Steeleville, Ill.**

Root's Goods for the West.

Address Jos. Nysewander, Des Moines, Ia.

California.

California. California. California.

CALIFORNIA !
Bee-keepers' Supplies,
WHOLESALE AND RETAIL.

We keep everything that is of practical use in the apiary. We make a specialty of Langstroth hives, and 60-lb. Honey-cans and Cases; also Comb Foundation.

Apiaries for sale.

We are also prepared to buy all the water-white Honey in Southern California, and pay the highest market price for the same.

Every one send for catalogue (free) to

L. E. MERCER & SONS,
Ventura, Cal.

☞In responding to this advertisement mention GLEANINGS.

FOR ALL KINDS OF BEE KEEPERS SUPPLIES.
ADDRESS LEAHY MFG. CO. HIGGINSVILLE MO.

In writing advertisers please mention this paper 21tfdb

DOVETAILED HIVES, SIMPLICITY HIVES,

SECTIONS, EXTRACTORS, ETC.

A FULL LINE OF

BEE-KEEPERS' SUPPLIES.

60-PAGE CATALOGUE. 1tfdb

J. M. JENKINS, WETUMPKA, ALABAMA.

☞In responding to this advertisement mention GLEANINGS.

SUPERIOR GOLD-EYED NEEDLES.

Cut shows the contents of the package, half size. The bodkins, darners, etc., as shown, are, not gold-eyed,, but there are besides these, four papers of elliptic gold-eyed needles such as are usually sold at 10c a paper. Our price for the pkg. is 15c, 10 for $1.25, 100, $12. By mail 1c each extra.

A. I. Root, Medina, O.

SPECIAL NOTICES.

ALSIKE CLOVER SEED.

Owing to the high price of medium and large clovers as compared with alsike, we are having a brisk trade in the latter at $10.00 a bushel; $5.10 for ½ bushel; $2 60 per peck; 22c per lb. We have choice seed on hand, and are filling orders promptly.

MAPLE SUGAR AND SYRUP.

We have begun to receive new syrup and sugar, but the roads are so very bad just now that, so far, the orders are ahead of the supply brought in. As soon as the roads dry up a little we shall no doubt be able to supply all demands. Choice syrup in gallon cans, $1.10; 10-gallon, $10.00. No. 1 choice sugar, 10c; No. 2, good, 9c; No. 3, fair, 8c; 50 lbs., ½c off; 300 lbs., 1c off.

CARLOAD SHIPMENTS.

Since our last issue we have received orders for three more carloads of supplies. One comes from Hebblewhite & Co., our representatives in Sidney, N. S. W., Australia. This firm is the largest foreign buyer of our goods, though we have quite a large trade in different countries. Another order comes from Thos. G. Newman, Chicago, Ill., who will, no doubt, be pleased to receive a call from bee-keepers attending the World's Fair this summer. The third comes from Jos. Nysewander, Des Moines, Ia. This makes his third car this season.

LAWN-MOWERS.

On the last inside cover page of this issue you will find our prices on lawn-mowers for this season. You will find they are lower than ever. The Globe mower we guarantee to be first-class in every respect, and as good as the high-priced mowers which sell for from $6 to $10 and even more. The Young America is a good cheap machine, and a bargain at the very low prices at which we list them.

COMB-FOUNDATION MACHINES.

We received, during one week in February, orders for over twenty-five of our comb-foundation machines. Eleven go to the Russian Agricultural Agency; four to Sidney, Australia; one to Cuba; one to England; one to Germany; one to France; two to Canada; besides a number in the United States. We furnished the W. T. Falconer Mfg. Co. with four machines a few weeks ago, and they write concerning them as follows:

"The foundation-machines have been set up, and we have this morning just finished giving them all a trial, and we find them very satisfactory indeed. We think the foundation they turn out the best we have ever made."

We keep a stock of 40 to 60 machines made up ahead, so we are prepared to take care of orders promptly.

COMB AND EXTRACTED HONEY.

We still have on hand between one and two hundred 24-lb. cases of that extra choice white comb honey, of which we bought a carload last fall from W. K. Ball, Reno, Nev. We are selling it in single-case lots at 18c; 4 cases, 17½; 9 cases or over, 17c per lb. Special prices on large lots. We have likewise about 20 cases of the same honey marked No. 2. It is just like the other except that it is not fully capped over. We offer this at 2c per lb. less. We have secured a lot of choice extracted honey in kegs of about 160 lbs. each. In order to get it we had to pay a fancy price, and we are unable to sell it in original kegs for less than 10½c per lb. If put into 60-lb. square cans the price will be 11c per lb. Choice honey, either comb or extracted, seems to be very scarce in the market, and we are fortunate in having it to offer at the above figures. If you can use any, send us your orders.

COWAN EXTRACTORS.

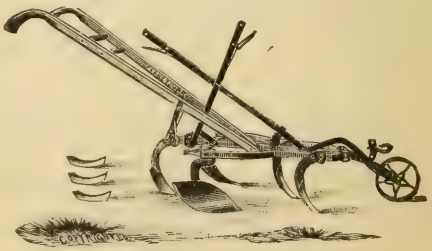
The favor with which these extractors are being received by bee-keepers is evidenced in a substantial manner by the increasing orders for them, as well as the kind words of appreciation from those who see them. We sent one in an order to Jno. H. Howard, of England; and as soon as he received it he sent us an order for ten more complete except the can. In the order for Sidney, Australia, we are sending ten complete two-frame Cowan machines, and five more without the can, besides a sample four and six frame; twenty-five Novice and two Stanley machines. J. F. Florey, a large bee-keeper of California, was in need of six large machines, and we sent a sample each of four-frame Cowan and four-frame Stanley. As soon as he saw them he chose the Cowan, at a higher price than we offered the Stanley, and ordered five more of them because of their superior merits. When in want of an extractor, look into the merits of the Cowan before you buy.

CHEAP WIRE NETTING.

Of the cheap wire netting with 3-inch mesh, offered in this department a month ago, we are practically sold out of every thing under 36 inches wide. We have the following in stock at present, and it is going rapidly:

5 rolls,	3-in.,	No. 20	netting,	36 in.	wide,	@ $1 80	a roll.
5 "	"	"	"	42	"	" 2 10	"
16 "	"	"	"	48	"	" 2 40	"
5 "	"	"	"	60	"	" 3 00	"
2 "	"	"	"	72	"	" 3 60	"
1 "	3-in.,	No. 19	"	30	"	" 1 75	"
16 "	"	"	"	36	"	" 2 10	"
12 "	"	"	"	42	"	" 2 45	"
8 "	"	"	"	48	"	" 2 80	"
8 "	"	"	"	72	"	" 4 20	"

Nothing in the shape of wire netting of equal quality was ever sold so low as the above. We have secured from the factory another lot of short rolls and remnants of 2-inch No. 19 and 20 of all widths, 12 inch up to 72, of which we will give a list in our next number. There will be nothing in that list to duplicate the above or of the same size.



PLANET JR. GARDEN TOOLS.

If any of our readers are interested or in need of hand or horse cultivators, garden-seed drills, and improved garden tools, we shall be pleased to send a catalogue of Planet Jr. implements, with handsomely embossed cover, and inclosing a net-price sheet giving the prices at which we can supply these implements. The above cut shows the horse cultivator, with wheel, that we furnish for $7.00 net. Other styles are furnished down to $4.00. All machines are shipped direct from Philadelphia, Pa. Send us your request for catalogues and your orders.

GREEN CORN CANNED.

For several years we have been buying canned corn on the market, testing different brands, hoping we might find some that was really good; but I had become almost disgusted, and concluded that, no matter how many recommends nor how extra choice nor *fancy* choice it was advertised, either the canning-factories had forgotten how or they did not care. Well, a few days ago, when we were ordering some pumpkin from friend Cummins (the man who wrote the part of the tomato-book in regard to raising tomatoes for canning-factories), we asked him to put in a sample of his sweet corn. He sent us three cans. Mrs. Root declared, before breakfast was ready, that no one could tell that canned corn from some that had just come from the garden. Why, it was absolutely equal to Shoepeg gathered and cooked before the husks had time to wilt. I have just ordered five cases; and when you are ordering goods of us, if you wish to test it yourself, you may have it for 15 cts. a can, or a case of two dozen cans for $2.75. I do not know what friend Cummins charges people where it is shipped directly from the factory; and perhaps he does not care to sell directly to consumers. You can write and ask him about it, if you choose. His address is D. Cummins, Conneaut, O. I know only this: That his

canning-factory is as neat and tidy as any first-class kitchen; and Mrs. Root says this must be the reason why every thing he puts up is so satisfactory.

SUGAR-BEET AND MANGEL-WURZEL PLANTS, ETC.

Last year we were surprised at the number of farmers who wanted the above plants; and one of the boys, in my absence, said he got $1.50 for the thinnings (1000 plants) of one row of mangel-wurzel. He guessed that $1.50 would be about right; and it was really a benefit to the row to have these taken out. Well, I have just learned that, by putting out plants very early, the mangels will grow all through the season, and get to be as large as flour-barrels (sometimes a *trifle* less); and this year we are going to be prepared for them. To-day is the 13th of March. The frost is very nearly if not quite out of the ground, and the tops of the ridges where we dug celery last year are dry enough to rake down into a nice, smooth, tolerably dry bed. In this bed we put two rows of peas, scattering them so thickly in each row that they almost touch. The boys are now preparing the ground for American Wonders. Alaskas were in several days ago. When the Alaskas begin to climb, one strip of poultry netting one foot wide, securely held up, will support the two rows of peas. Well, we have put in Eclipse beets, sugar beets, and mangel-wurzel in the same way; and if you want any plants the price will be 20 cts. per 100, or $1.50 per 1000. If wanted by mail, add a half more to the above prices.

THE PLANT BUSINESS AT THE PRESENT DATE, MARCH 10.

We can furnish asparagus-plants in any quantity —in fact, they are going out every day. Of onion-plants, we have the American Pearl and the Egyptian, mentioned below. Of lettuce-plants, we have the Grand Rapids. The above, I believe, are all that are ready. We are sending out strawberry-plants every day; also basswood-trees.

EGYPTIAN ONION-PLANTS.

When we gathered our sets last August we had something like 30 or 40 bushels that were so much disposed to heat that we spread them out in a dry room; and before we knew it some got dry more than we meant to have them. Several of our customers were so sure these were good for nothing we replaced them. Having found by experience, however, that it is a pretty hard matter to kill the Egyptian onion in any shape, we sorted over our sets and took the dried-up ones that seemed little better than chaff (some of them) and planted them quite thickly in a bed in the greenhouse. As I expected, nearly every one of them grew, and now we have some splendid plants with strong roots and nice dark-green tops. We are furnishing these at the same price as the cabbage-plants—5 cts. for 10; 40 cts. per 100. If wanted by mail, add 5 cts. for 10, or 20 cts. per 100, for postage.

CABBAGE-PLANTS.

We have only the Jersey Wakefield ready, at the usual price—5 cts. for 10; 40 cts. per 100; $3.00 per 1000; seedling plants, half the above prices.

AMERICAN PEARL ONION-SETS.

Those we planted last fall have wintered thus far better than ever before; in fact, their bright green tops show an almost perfect stand. I presume it is owing to the abundant heavy snow that covered the ground from the middle of December until into March. Besides, they made a good growth last fall, and sent their roots away down into the rich mellow creek-bottom soil. Again, the land was underdrained and *surface* drained.

PRIZETAKER ONIONS WINTERING OVER.

Some time in July, having some seed left, we sowed quite a lot of Prizetaker and White Victoria onion seed, putting the seed in quite thickly. It came up and grew, but did not make sets before frost came. Some of them had bottoms large enough for sets; but instead of being a set it was a stout green onion, owing, probably, to the lack of warm dry weather at the time when they should have made bulbs. As we did not know what to do with them, we just let them stand; and at this date, March 14, they have commenced to grow, and have a splendid lot of white roots, although the tops are, of course, more or less frosted. If we could depend on having them do this right along, it would be cheaper than starting onion-plants in the greenhouse and cold-frames; but my opinion is, that the long steady winter, with a heavy covering of snow, has had much to do with it, and we have just sent some of them to a friend in the South, to see whether they will make nice onions when planted out in the open ground. Probably the trying time will be during the alternate freezing and thawing for the next two weeks. I have tried mulching; but after onions are a little frosted they are so apt to rot, unless they have plenty of sun and air, I have about concluded to let them take their chances.

THAT NEW GREENHOUSE.

It would surprise you to see how fast things grow there since we have plenty of sunshine, with hot steam under the beds and hot water overhead, whenever it is needed. One of those twenty-foot beds has now growing on it perhaps 50,000 onion-plants. To see what I could do, when onions were well up I put a row of tomatoes just half way between the onions. The rows of onions were only 4 inches apart, remember. When they got so high they were in danger of choking the tomatoes, we trimmed the long tops off with a pair of shears. The tomatoes came up and grew, right from the word go. I do not know how many days it was, but they had their second leaves out in an incredibly short space of time, and now we are taking them up, and transplanting them to another bed. I do not think this heavy cropping will hurt the onions at all; but as fast as the tomatoes come out we propose to stir in some guano to make up for this double draft on the soil. No one yet knows what may be done on a single square yard, where we have heat, light, water, and plant-food *ad libitum*.

A NEW BOOK ON MANURES.

W. Atlee Burpee & Co. have just sent out "Manures; how to Make and how to Use them." It is a book of over 200 pages. Price 50 cts. Of course, a large part of it is devoted to chemical fertilizers; and this is a matter that troubles me sorely. I said, a short time ago, that we did not get any good results from chemical fertilizers. I then overlooked the fact that we have had very good success on potatoes with the Mapes potato manure. But the Mapes fertilizers all contain guano. In fact, we have been puchasing guano of the Mapes people for a number of years. Is it possible the guano does the work, while the other ingredients are, for our soils, of little or no value? This spring they told me they could not spare any more guano, for they wanted all of it for their different fertilizers; and I am pretty well satisfied that nitrate of soda is of no value on our land, and I do not believe that potash is of much value either. Prof. Thorne, of our Ohio Experiment Station, recently said that the soils of Northern Ohio contain already much potash, and that it was doubtful whether they needed any more. Yet farmers are paying out great sums of money for chemical fertilizers to put on their wheat. Is it possible that they buy a good deal of something they *don't* need, in order to get something they *do* need? I greatly fear that such is the case; and this new book most urgently recommends that every farmer make *soil* tests with the fertilizers, and several chapters are devoted to instructing how this should be done. When you have determined, by actual fair tests, what your ground needs and what it does *not* need, then you are ready to invest your money. A good part of the book is also about farmyard manures. In fact, there is a discussion in regard to the manurial value of all the by-products and waste-products that are likely to be found in any town or city in our country. A good deal is also said in regard to green manures, and plowing under different crops; and I have been surprised to learn that corn is a good deal used in this manner. Two crops are plowed under in a season. After this you are ready to raise something. The book may be ordered of Burpee, or we can send it from here.

CHENANGO VALLEY APIARY.

If you want beautiful Golden Italian Queens, or from Imported mothers, send in your orders early. Tested, in June, $1.50; untested, $1.00. Strawberry-plants of the latest and best varieties cheap. Send for circular. MRS. OLIVER COLE,
6tfdb Sherburne, Chenango Co., N. Y.

No Garden Should Be Without

Burpee's Bush Lima

The ONLY BUSH form of the TRUE LARGE Lima Bean.

Needs no stakes, trellises, or other support.

Undoubtedly the most remarkable novelty in Vegetables. It begins bearing as early as the large Lima Pole Bean, and its prolificness is shown by the fact that a single plant last season gave **358 pods.** The illustration herewith is not exaggerated, but has been accurately reproduced from nature—natural size.

It comes Absolutely True from Seed,

and creates a sensation wherever grown.

Price of **THE GENUINE SEED:**
Per liberal packet, 15 cents; 2 packets 25 cts.; ½ pint 40 cts.; pint 75 cts.; quart $1.40; postpaid by mail. By express $1.25 per quart; four quarts or more, **$1.00 per quart.**

For full description, see

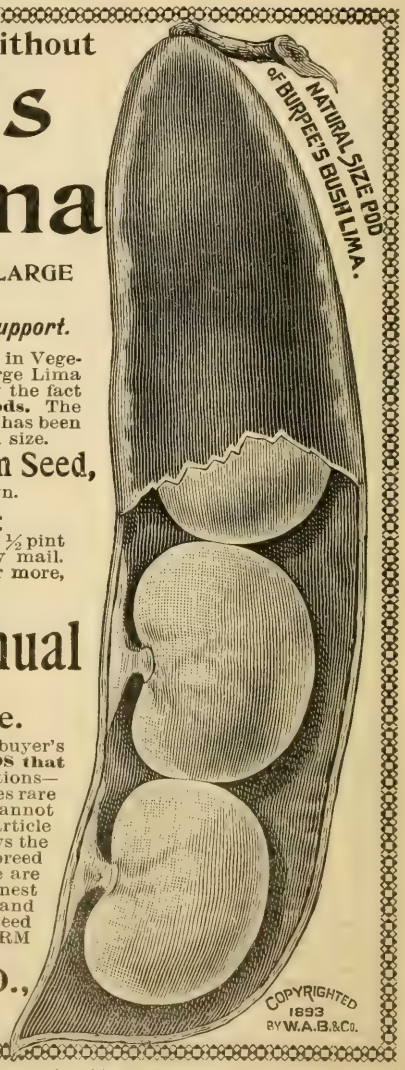
Burpee's Farm Annual

For 1893

Better than Ever Before.

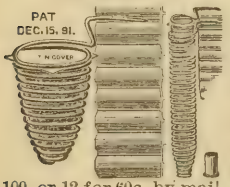
A handsome book of 172 pages in the seed buyer's interest. It tells all about the **BEST SEEDS that grow**; honest descriptions, truthful illustrations—colored plates painted from nature; includes rare novelties in Vegetables and Flowers which cannot be had elsewhere. A five-page illustrated article **"Where and How Seeds are Grown,"** shows the knowledge, enterprise and skill necessary to breed up seeds. You should know of this, as there are tons on tons of seeds of common quality, honest but poor, which come from poor plants, and naturally grow poor plants. If you are a seed buyer, send a postal card to-day for our FARM ANNUAL—it is **FREE.**

W. ATLEE BURPEE & CO., Philadelphia.



In writing to advertisers please mention this paper. 21 20db

CONTROL YOUR SWARMS.



N. D. West's Spiral Wire Queen-Cell Protectors will do it, and you can RE-QUEEN your apiary during the swarming season. Pronounced the best by such men as Capt. J. E. Hetherington, Cherry Valley, N. Y.; P. H. Elwood, Starkville, N. Y., and others. Cell-Protectors, $3.00 per 100, or 12 for 60c, by mail. Cages, $5.00 per 100, or 12 for $1.00, by mail. Samples of both, with circular explaining, 25 cts. The cages are used for hatching queens in any hive, and are the best Bee-Escape in use. Address 5-8db

N. D. WEST, Middleburgh, Schoharie Co., N. Y.

In responding to this advertisement mention GLEANINGS.

GOLDEN WYANDOTTES.

Finest birds in the land. Cockerels, $5.00; trio, $7.00. Eggs, $2.00 per 13.

4tfdb ***E. D. KEENEY, ARCADE, N. Y.***

In responding to this advertisement mention GLEANINGS.

Golden Queens From Texas.

My bees can not be surpassed for business, beauty, and gentleness. Safe arrival and satisfaction guaranteed. Untested queens—March, April, and May—$1 each. **50** fine Tested Queens for early orders, $1.50 each. Order early. Send for price list. 5-16db.

J. D. GIVENS, Box 3, Libson, Tex.

Eggs and Plants.

Several varieties. Best quality. Any quantity. Finely illustrated catalogue free. Address

GEER BROS., St. Marys, Mo., or H. B. GEER, Nashville, Tenn.

GOOD SECTIONS CHEAP!

We have a few thousand sections that are not all perfectly smooth, but are GOOD sections. We offer them, 500 for 80 cts.; 1000 for $1.50; 3000 for $4.25. All widths. 5-6

I. J. STRINGHAM, 92 Barclay St., N. Y.

In responding to this advertisement mention GLEANINGS.

Low Freight Rates and No Delays.

When you are considering where to send for your supplies the coming season, get prices and a list of goods on hand, from one of the following dealers, who handle **ROOT'S GOODS** in carload lots, thus securing them at lowest cost. Most of them, except those far distant, sell goods to users at factory prices, while those far distant add approximately only the carload rate of freight, so that you will **Save Time and Money** by buying your supplies of one of these dealers. We can not give here a list of goods kept, as it varies some at the different places according to the varying needs of each locality. Write to the place nearest you for list with prices, and when you write give a list of the goods you want, and mention this paper.

Quite a full line of goods are sold at factory prices by
F. A. Salisbury, Syracuse, N. Y.
H. G. Acklin, 1024 Mississippi St., St. Paul, Minn.
Jos. Nysewander, Des Moines, Iowa.
A good assortment is also kept for the Far West by
Barteledes & Co., Denver, Col.
For California by
G. G. Wickson & Co., San Francisco and Los Angeles.
For Oregon and Washington by
F. L. Posson & Son, Portland, Oregon.
For the Southeast Atlantic coast by
Baltimore Farm Implement Co., Baltimore, Md.;
and for the Far South by
J. M. Jenkins, Wetumpka, Ala.

A smaller assortment, consisting chiefly of Dovetailed hives, sections smokers, foundation, and extractors is also kept by the following:
Henry F. Hagen, Rocky Ford, Colo. W. K. Ball, Reno, Nev. W. O. Victor, Wharton, Tex. John Nebel & Son, High Hill, Mo. Thos. G. Newman, Chicago, Ill. Walter S. Pouder, Indianapolis, Ind. Vickery Bros., Evansville Ind.

Our Hives, Comb Fdn., Sections, Smokers, Extractors, Perf. Zinc, etc., are furnished by a multitude of other dealers too numerous to mention. If you want to buy goods made at the Home of the Honey Bees, you can get them as cheap as you can anywhere when you consider quality and workmanship, and your orders will be taken care of promptly. Don't expect to get all the goods we advertise, from any of above dealers, and don't expect to get goods they do not agree to furnish; but find out what they agree to furnish, and at what price, by writing for list to address nearest you.

A. I. Root, Medina, O.

In writing to any of above please mention GLEANINGS.

I TELL you what, Jones, **Levering Bros.** sell the best goods and at the lowest price of any one I've struck yet. The largest and best equipped

Bee-Hive Factory

in the West. The Dovetailed Hive and New Hoffman self-spacing frame a specialty. Every thing used by practical bee-keepers at wholesale and retail. Send for their free Illustrated Price List, and save money. Supply Dealers, send for their Wholesale List. Address

LEVERING BROS.,
Wiota, Cass Co., Iowa.
3-14db
Please mention this paper.

14 Railroads

to carry the goods we manufacture to all parts of the country. Can cut any hive ordered. Langstroth improved Simplicity a specialty. All kinds of Bee Supplies, Queens and Bees. Light and dark colored Ferrets. Send for price list.

R. E. HARBAUGH,
2tfdb ***25th & Clay Sts., St. Joseph, Mo.***
Please mention this paper.

Best on Earth.

More than one hundred thousand Bingham & Hetherington Honey-knives and Bee-smokers in daily use. Illustrations sent free.

Bingham & Hetherington,
Abronia, Mich. 7tfdb

DON'T purchase a SELF-HIVER until you have read about the PERFECTION in our 18-page circular. Sent free. Address 24-tfdb
HENRY ALLEY, WENHAM, MASS.
Please mention this paper.

Kind Words From Our Customers.

I don't think any person who keeps bees should be without GLEANINGS. I know it has been a great help to me for the time I have taken it.
Ortonville, Mich., Jan. 2. N. J. AUTEN.

OUR HUBBARD SQUASH SEED.

My squashes this year were about equal to those of your neighbor from whom you purchased yours. Mine were planted on less than two square rods of land, but they ran so I don't know how much they grew on; and I had the best squashes I ever saw—about 500 lbs. in all. My surplus brought only 1c per lb., however. I have tried for several years to get Hubbard squash seed equal to what we formerly had, but failed until I got some of A. I. Root's stock seed; that filled the bill. Of course, the land was rich. B. HASSETT.
Bonair, Iowa, Dec. 21.

FROM BOHEMIA.

I was very much pleased with the books you sent me, especially with "What to Do," etc. May be I read it 20 times over, but it has ever its charms. I can not express enough thankfulness for it.

Ignotum tomatoes did not grow well, on account of the cold weather here. I have some pear-shaped tomatoes which do better here. I should be very glad if I could serve you in any way, but my English is poor, and you will kindly excuse me.
Seltshan, Bohemia, Dec. 5. R. STRIMPL.

[Many thanks for your exceedingly kind words, friend S.; and, by the way, you have struck upon something I have noticed myself; that is, the pear-shaped tomatoes, and all others of that class, are much more hardy than the larger tomatoes. The plants are more robust in standing frost in the spring, and they hold out longer in the fall. Therefore those who live in localities where tomatoes do not ripen, may raise these smaller ones, probably, without trouble. A great variety of them can be found in most seed catalogues—peach, pear, cherry, plum, etc. The peach is probably the largest and most desirable of the class. The demand, however, is so limited, where large tomatoes can be grown, that we have dropped them from our list.]

A KIND WORD, WITH A CRITICISM THROWN IN.

Give us lots of high and low pressure gardening items, notes of travel, Rambler's articles, and illustrations, because we do not wish to confine ourselves alone to bees. I keep only enough for my own use. But don't give so much silly religious talks. By what authority do you exhort your readers? You are not a very symmetrical, or well-balanced religious teacher, anyhow. You seem to be rather narrow in your reference to labor questions and capital. I know you are honest. I've read your Home Papers for 15 years at least, but I should prefer to be taught by a broader and more liberal-minded man or teacher. I doubt whether you ever accomplish much good by those talks. But it has enabled you to gain the confidence of many of your patrons. L. A. DOSCH.
Miamisburg, Ohio, Jan. 2.

[Many thanks, brother D., for your very candid and frank expression in regard to the work of your humble servant. It reminds one somewhat of a sandwich; only, instead of having the meat in the middle, you have got it at the beginning and end. My good pastor, Rev. A. T. Reed, said once, in a prayer, that he thanked God for his enemies, for they told him of his faults; but I ought to be more thankful still for a very good *friend* who has told me of *my* faults. I have felt at different times every word of what you say. I have prayed earnestly, and am praying, that the Holy Spirit may guide me, and keep me from mistakes. I think, however, that, should you read the kind words I get from these very Home Papers, you might change your opinion somewhat in regard to the result. May God help me to guard carefully and make a good use of that confidence which you allude to in your closing sentence.]

Books for Bee-Keepers and others.

Any of these books on which postage is not given will be forwarded by mail, postpaid, on receipt of price.

In buying books, as every thing else, we are liable to disappointment if we make a purchase without seeing the article. Admitting that the bookseller could read all the books he offers, as he has them for sale, it were hardly to be expected he would be the one to mention all the faults, as well as good things about a book. I very much desire that those who favor me with their patronage shall not be disappointed, and therefore I am going to try to prevent it by mentioning all the faults, so far as I can, that the purchaser may know what he is getting. In the following list, books that I approve I have marked with a *; those I especially approve, **; those that are not up to times, †; books that contain but little matter for the price, large type, and much space between the lines, ‡; foreign, §. The bee-books are all good.

BIBLES, HYMN-BOOKS, AND OTHER GOOD BOOKS.

As many of the bee-books are sent with other goods by freight or express, incurring no postage, we give prices separately. You will notice, that you can judge of the size of the books very well by the amount required for postage on each.

8 | Bible, *good print*, neatly bound..... 20
10 | Bunyan's Pilgrim's Progress**..... 30
20 | Illustrated Pilgrim's Progress**..... 75
This is a large book of 425 pages and 175 illustrations, and would usually be called a $2.00 book. A splendid book to present to children. Sold in gilt edge for 25c more.

6 | First Steps for Little Feet. By the author of the Story of the Bible. A better book for young children can not be found in the whole round of literature, and at the same time there can hardly be found a more attractive book. Beautifully bound, and fully illustrated. Price 50 c. Two copies will be sold for 75 cents. Postage six cents each.
5 | Harmony of the Gospels..... 35
3 | John Ploughman's Talks and Pictures, by Rev. C. H. Spurgeon*..... 10
1 | Gospel Hymns, consolidated Nos. 1, 2, 3, and 4, words only, cloth, 10 c; paper..... 05
2 | Same, board covers..... 20
5 | Same, words and music, small type, board covers..... 45
10 | Same, words and music, board covers..... 75
3 | New Testament in pretty flexible covers... 05
5 | New Testament, new version, paper covers. 10
5 | Robinson Crusoe, paper cover..... 10
4 | Stepping Heavenward**..... 18
15 | Story of the Bible**..... 1 00
A large book of 700 pages, and 274 illustrations. Will be read by almost every child.
5 | The Christian's Secret of a Happy Life**.... 25
8 | Same in cloth binding..... 50
| "The Life of Trust," by Geo. Muller**..... 1 25
1 | Ten Nights in a Bar-Room, T. S. Arthur*.. 05
5 | Tobacco Manual**..... 45
This is a nice book that will be sure to be read, if left around where the boys get hold of it, and any boy that reads it will be pretty safe from the tobacco habit.

BOOKS ESPECIALLY FOR BEE-KEEPERS.

Postage] [Price without postage.
15 | A B C of Bee Culture. Cloth..... 1 10
5 | A Year Among the Bees, by C. C. Miller... 45
| Advanced Bee Culture, by W. Z. Hutchinson 50
14 | Bees and Bee-keeping, by Frank Cheshire, England, Vol. I.§..... 2 36
21 | Same, Vol. II.§ .....r 2 79
or, $5.25 for the two, postpaid.
| Bees and Honey, by T. G. Newman..... 1 00
10 | Cook's New Manual. Cloth..... 90
5 | Doolittle on Queen-Rearing..... 95
2 | Dzierzon Theory 10
1 | Foul Brood; Its Management and Cure; D. A. Jones 09
1 | Honey as Food and Medicine..... 05
10 | Langstroth on the Hive and Honey-Bee‡.. 1 25
15 | Langstroth Revised by Ch. Dadant & Son.. 1 25
10 | Quinby's New Bee-Keeping. 1 40
| Thirty Years Among the Bees, by H. Alley 50
4 | Success in Bee Culture, by James Heddon 46
| Handling Bees, by Langstroth. Revised by Dadant 08
| Bee-keeping for Profit, by Dr. G. L. Tinker 25
| The Apiary; or, Bees, Bee-hives, and Bee Culture, by Geo. Neighbor & Sons, Eng.§ 1 75
5 | The Honey Bee, by Thos. William Cowan.. 95
| British Bee-Keeper's Guide Book, by Thos. William Cowan, England§..... 40
3 | Merrybanks and His Neighbor, by A.I. Root 15
4 | Winter Problem in Bee-keeping, by Pierce 46

MISCELLANEOUS HAND-BOOKS.

3 | A B C of Potato Culture, Terry**..... 35
This is T. B. Terry's first and most masterly work. The book has had an enormous sale, and has been reprinted in foreign languages. When we are thoroughly conversant with friend Terry's system of raising potatoes, we shall be ready to handle almost any farm crop successfully. It has 48 pages and 22 illustrations.

5 | A B C of Carp Culture, by Geo. Finley..... 35
5 | A B C of Strawberry Culture, by T. B. Terry and A. I. Root, 144 pages; 32 illustrations 35
5 | An Egg-Farm, Stoddard** 45
| Amateur Photographer's Hand-book**.... 70
| Barn Plans and Out-Buildings*... ..... 1 50
| Canary Birds. Paper,..... 50
| Draining for Profit and Health, Warring.. 1 50
10 | Fuller's Grape Culturist **..... ..... 1 40
| Farming For Boys*.... 75
This is one of Joseph Harris' happiest productions, and it seems to me that it ought to make farm-life fascinating to any boy who has any sort of taste for gardening.

7 | Farm, Gardening, and Seed-Growing**..... 90
This is by Francis Brill, the veteran seed-grower, and is the only book on gardening that I am aware of that tells how market gardeners and seed-growers raise and harvest their own seeds. It has 166 pages.

12 Gardening for Pleasure, Henderson*..... 1 85
While "Gardening for Profit" is written with a view of making gardening PAY, it touches a good deal on the pleasure part; and "Gardening for Pleasure" takes up this matter of beautifying your homes and improving your grounds without the special point in view of making money out of it. I think most of you will need this if you get "Gardening for Profit." This work has 404 pages and 203 illustrations.

12 | Gardening for Profit, new edition**.... ... 1 85
This is a late revision of Peter Henderson's celebrated work. Nothing that has ever before been put in print has done so much toward making market-gardening a science and a fascinating industry. Peter Henderson stands at the head, without question, although we have many other books on these rural employments. If you can get but one book, let it be the above. It has 376 pages and 138 cuts.

| Gardening for Young and Old, Harris** 1 25
This is Joseph Harris' best and happiest effort. Although it goes over the same ground occupied by Peter Henderson, it particularly emphasizes thorough cultivation of the soil in preparing your ground; and this matter of adapting it to young people as well as old is brought out in a most happy vein. If your children have any sort of fancy for gardening it will pay you to make them a present of this book. It has 187 pages and 46 engravings.

10 | Garden and Farm Topics, Henderson**.... 75
| Gray's School and Field Book of Botany... 1 80
5 | Gregory on Cabbages; paper*..... 25
5 | Gregory on Squashes; paper*..... ... 25
5 | Gregory on Onions; paper*..... 25
The above three books, by our friend Gregory, are all valuable. The book on squashes especially is good reading for almost anybody, whether they raise squashes or not. It strikes at the very foundation of success in almost any kind of business.

15 | How to Make the Garden Pay.**..... 1 35
By T. Greiner. This is a new book, just out, and it gives the most explicit and full directions for gardening under glass of any book in the world. Those who are interested in hot-beds, cold-frames, cold-greenhouses, hot-houses or glass structures of any kind for the growth of plants, can not afford to be without the book.

| Handbook for Lumbermen..... 10
10 | Household Conveniences 1 40
2 | How to Propagate and Grow Fruit, Green* 15
2 | Injurious Insects, Cook..... ... 25
10 | Irrigation for the Farm, Garden, and Orchard, Stewart*..... ..... 1 40
This book, so far as I am informed, is almost the only work on this matter that is attracting so much interest, especially recently. Using water from springs, brooks, or windmills, to take the place of rain, during our great droughts, is the great problem before us at the present day. The book has 274 pages and 142 cuts.

3 | Maple Sugar and the Sugar-bush**..... 35
By Prof. A. J. Cook. This was written in the spring of 1887 at my request. As the author has, perhaps, one of the finest sugar-camps in the United States, as well as being an enthusiastic lover of all farm industries, he is better fitted, perhaps, to handle the subject than any other man. The book is written in Prof. Cook's happy style, combining wholesome moral lessons with the latest and best method of managing to get the finest syrup and maple sugar, with the least possible expenditure of cash and labor. Everybody who makes sugar or molasses wants the sugar-book. It has 42 pages and 35 cuts.

1 | Poultry for Pleasure and Profit**..... 10
11 | Practical Floriculture, Henderson* 1 35
10 | Profits in Poultry*.... 90
2 | Practical Turkey-raising 10
By Fanny Field. This is a 25-cent book which we offer for 10 cts.; postage, 2 cts.

4 | Peabody's Webster's Dictionary..... ... 10
Over 30,000 words and 250 illustrations.

2 | Rats: How to Rid Farms and Buildings of them, as well as other Pests of like Character 15
This little book ought to be worth dollars instead of the few cents it costs to any one who has ever been troubled with these pests, and who has not? It is written in such a happy vein that every member of the family will read it clear through, just about as soon as they get hold of it. It contains a complete summing up of the best information the world can furnish.

1 | Silk and the Silkworm..... 10
10 | Small-Fruit Culturist, Fuller..... ..... 1 40

10 | Success in Market-Gardening*... 90
This is a new book by a real, live, enterprising, successful market-gardener who lives in Arlington, a suburb of Boston, Mass. Friend Rawson has been one of the foremost to make irrigation a practical success, and he now irrigates his grounds by means of a windmill and steam-engine whenever a drought threatens to injure the crops. The book has 208 pages, and is nicely illustrated with 110 engravings.

| Ten Acres Enough.. .. .. 1 00
| The Silo and Ensilage, by Prof. Cook, new edition, fully illustrated 25
| Talks on Manures*..... .... 1 75
This book, by Joseph Harris is, perhaps, the most comprehensive one we have on the subject, and the whole matter is considered by an able writer. It contains 366 pages.

2 | The Carpenter's Steel Square and its Uses. 15
10 | The New Agriculture; or, the Waters Led Captive..... 75
2 | Treatise on the Horse and his Diseases..... 10
5 | Tile Drainage, by W. I. Chamberlain..... 35
Just out. Fully illustrated, containing every thing of importance clear up to the present date.
The single chapter on digging ditches, with the illustrations given by Prof. Chamberlain, should alone make the book worth what it costs, to every one who has occasion to lay ten rods or more of tile. There is as much science in digging as in doing almost any thing else; and by following the plan directed in this book, one man will often do as much as two men without this knowledge. The book embraces every thing connected with the subject, and was written by the author while he was engaged in the work of digging the ditches and laying the tiles HIMSELF, for he has laid literally miles of tile on his own farm in Hudson, O.

5 | Tomato Culture..... 35
In three parts. Part first—by J. W. Day, of Crystal Springs, Miss., treats of tomato culture in the South, with some remarks by A. I. Root, adapting it to the North. Part second—By D Cummins, of Connecaut, O., treats of tomato culture especially for canning-factories. Part third—By A. I. Root, treats of plant-growing for market, and high-pressure gardening in general. This little book is interesting because it is one of the first rural books to come from our friends in the South. It tells of a great industry that has been steadily growing for some years past; namely, tomato-growing in the South to supply the Northern markets. The little book, which is fully illustrated, gives us some pleasant glimpses of the possibilities and probabilities of the future of Southern agriculture. Even though you do not grow tomatoes to any considerable extent, you will find the book brimful of suggestions of short cuts in agriculture and horticulture, and especially in the line of market-gardening.

5 | The New Onion Culture*..... 20
This book is by T. Greiner, and it gives full particulars of the plan of planting onion seed in a greenhouse, hot-bed, or cold-frame, and planting the onions out in the field at the time we usually sow the seed. The author thinks that 2000 bushels of the large tropical onion can by this method be raised on an acre.

2 | The New Celery Culture 15
This summing-up of this new industry amounts to this: You fix your ground just as rich as you can possibly get it, with stable manure, chemical fertilizers, or any thing else that will do the business. Then put out your plants 7 inches apart each way, and give them water enough to make them boom right along from the word go. The idea is somewhat new; but enough succeeded in 1892 to demonstrate that, like the new onion culture, it promises great possibilities.

3 | Winter Care of Horses and Cattle..... 35
This is friend Terry's second book in regard to farm matters; but it is so intimately connected with his potato-book that it reads almost like a sequel to it. If you have only a horse or a cow, I think it will pay you to invest in the book. It has 44 pages and 4 cuts.

8 | What to Do and How to be Happy While Doing It, by A. I. Root..... 50
3 | Wood's Common Objects of the Microscope**..... 47

NEW BOOKS ON GARDENING.

2 | Celery for Profit, by T. Greiner..... 25
The first really full and complete book on celery culture, at a moderate price, that we have had. It is full of pictures, and the whole thing is made so plain that a schoolboy ought to be able to grow paying crops at once, without any assistance except from the book.

3 | Onions for Profit 45
Fully up to the times, and includes both the old onion culture and the new method. The book is fully illustrated, and written with all the enthusiasm and interest that characterize its author, T. Greiner. Even if one is not particularly interested in the business, almost any person who picks up Greiner's books will like to read them through.

5 | Manures; How to Make and How to Use them; in paper covers..... 45
6 | The same in cloth covers..... 65
Covering the whole matter, and discussing every thing to be found on the farm, refuse from factories, mineral fertilizers from mines, etc. It is a complete summing-up of the whole matter. It is written by F. W. Sempers.

7 | Market-gardening and Farm Notes, by Burnett Landreth 90
The Landreths are the pioneer seedsmen of America; and the book is worth fully as much as we might expect it to be. I think I received hints from it worth the price, before it had been in my hands fifteen minutes. It is exceedingly practical, and tells what has been done and what is BEING done, more than it discourses on theory.

A. I. ROOT. Medina, O.

Fruit Trees Plants ETC. AT ½ PRICE

Every class of Trees and Plants that is hardy in a Northern climate,

Fruit, Ornamental, Nut and Flowering

OUR CATALOGUES THE MOST ELABORATE IN THE WORLD PUBLISHED BY A NURSERY HOUSE, AND QUOTING PRICES ½ THOSE ASKED BY SOLICITORS.

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LOVETT'S GUIDE TO FRUIT CULTURE tells all about fruits, their merits and defects, how to plant, prune, cultivate; describes the best novelties, etc. Richly illustrated; several colored plates. Price 10 cents.

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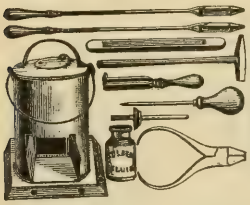

OATMAN'S SOLDERING AND REPAIR KIT

Consists of fire-pot, soldering-irons, solder, and soldering-fluid, with tools compl'te as shown in cut, with directions for soldering different metals, and how to keep your soldering-irons in shape. Whole kit, boxed, 12 lbs. Shipped on receipt of $2.00. Agents wanted.

O. & L. OATMAN,
8-7db **Medina, Ohio.**

300—FLORIDA
LEATHER-BACK ITALIAN QUEENS.

By my special method of harvesting a crop, in the "*migratory*" system, I shall have 300 *tested* queens for delivery about March 20th. $10 per dozen. *None are over 6 months old.* My crop the past season from one yard of 42 colonies, spring count, was 10,800 lbs., and increase to 150 **A. F. BROWN,**
1-6db **HUNTINGTON, PUTNAM CO., FLA.**

☞In responding to this advertisement mention GLEANINGS.

TAKE NOTICE!

BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH,
14tfdb New London, Wis.

Please mention this paper.

BUFFALO, N. Y. Unsurpassed Honey Market. BATTERSON & CO. Responsible, Reliable, Commission Merchants. 18tfdb **and Prompt.**

Root's Goods AT ROOT'S PRICES can be had at Des Moines, Iowa. Address Jos. Nysewander.

"Quigley's Golden Queens"

are bred for business; try one. Circular of Queens and Bee Supplies ready Feb. 1st. Send for it, and a free sample copy of the

PROGRESSIVE BEE-KEEPER.

Address **E. F. QUIGLEY,**
2tfdb **Unionville, Mo.**

Please mention this paper.

BEE-HIVES AND SUPPLIES.

Send for catalogue free. Address **SAMUEL JONES,** Highland Park College, Des Moines, Iowa. 1-19db

Bee-Hives.

Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue. 23-22db

W. H. PUTNAM, River Falls, Pierce Co., Wis.

ITALIAN QUEENS. Tested, $1.50; 6 for $7.50. Sent after Mar. 1st. Untested, $1.00; 6, $5.00; or $9.00 per 12. Sent after April 1st. Safe arrival guaranteed. Send for circular of Bees, Queens, Drones, Root's Dovetailed Hives, Foundation, Extractors, etc. **J. N. COLWICK, Norse, Bosque Co., Tex.**

For new price list of *PURE ITALIAN BEES AND QUEENS, AND WHITE AND BROWN FERRETS, ADDRESS* *N. A. KNAPP,* *ROCHESTER, LORAIN CO., O.*

Please mention this paper. 4tfdb

Pacific Coast Bee-men

will find it to their advantage to correspond with the

Clipper Gap Bee-Hive Factory

for prices of Dovetailed hives, Hoffman frames, Honey Sections, etc.

S. F. WOODWORTH, Prop'r,
Clipper Gap, Placer Co., Cal.

4-9db

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Honey-Extractor.

Square Glass Honey-Jars,
Tin Buckets, Bee-hives.
Honey-Sections, &c., &c.
Perfection Cold-Blast Smokers.

APPLY TO
CHAS. F. MUTH & SON, Cincinnati, O.

Send 10-ct. stamp for "Practical Hints to Bee-keepers."
Please mention this paper.

HATCH CHICKENS BY STEAM
WITH THE IMPROVED
EXCELSIOR INCUBATOR.

Thousands in Successful Operation. *SIMPLE, PERFECT, and SELF-REGULATING.* **Guaranteed to hatch a larger percentage of fertile eggs, at less cost, than any other Incubator.** Send 6c. for Illus. Catalog. Circulars Free.

GEO. H. STAHL, Pat. & Sole Mfr., Quincy, Ill.

☞Please mention GLEANINGS. 22-9db

DO YOU KNOW

That W. H. Bright is selling bee-hives and fixtures at a bargain? If not write for price list.
6-11db **W. H. BRIGHT, MAZEPPA, MINN.**

HUNT'S FOUNDATION FACTORY.

Send for **Free Samples** of the **Finest Foundation** and **Sections** made. Special prices and advantages to dealers in Foundation. Send for my new illustrated **Free Price List** of every thing needed in the apiary. M. H. HUNT, Bell Branch, Mich.
2tfdb Please mention this paper.

VANDERVORT COMB-FOUNDATION MILLS.

Send for samples and reduced price list.
1tfd **JNO. VANDERVORT, Laceyville, Pa.**

FOR SALE. About 1700 lbs. of pecan nuts. Samples sent to any one making an offer.
2-7db R. A. JANSEN, Wharton, Tex.

FOR SALE 250 COLONIES FINE ITALIAN BEES
IN DOVETAILED HIVES, $4.00 EACH.
Lots of 20 or more, special prices on application.
2-7db *MRS. PAUL B. LEEDS, AVERY P. O., LA.*

Please mention this paper 4-9db

AUTOMATIC COMB FOUNDATION MILLS. | **Made by W. C. PELHAM, Maysville, - Ky.**
Please mention GLEANINGS. 3 7db

FINE ITALIAN QUEENS.

Tested, $1.00 each; Untested, 60c. Best Imported Mothers Only.

These are all young; and for gentleness, industry, and uniformity of color their bees are unsurpassed. Safe arrival guaranteed. Money-order office, Hickory. *Cleveland Bros., Decatur, Newton Co., Miss.*

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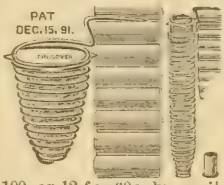
CONTROL YOUR SWARMS.



N. D. West's Spiral Wire Queen-Cell Protectors will do it, and you can REQUEEN your apiary during the swarming season. Pronounced the best by such men as Capt. J. E. Hetherington, Cherry Valley, N. Y.; P. H. Elwood, Starkville, N. Y., and others. Cell-Protectors, $3.00 per 100, or 12 for 60c, by mail. Cages, $5.00 per 100, or 12 for $1.00, by mail. Samples of both, with circular explaining, 25 cts. The cages are used for hatching queens in any hive, and are the best Bee-Escape in use. Address 5-8db
N. D. WEST, Middleburgh, Schoharie Co., N. Y.

GOLDEN WYANDOTTES.

Finest birds in the land. Cockerels, $5.00; trio, $7.00. Eggs, $2.00 per 13.
4tfdb *E. D. KEENEY, ARCADE, N. Y.*

Golden Queens From Texas.

My bees can not be surpassed for business, beauty, and gentleness. Safe arrival and satisfaction guaranteed. Untested queens March, April, and May $1 each. **50** fine Tested Queens for early orders, $1.50 each. Order early. Send for price list. 5-16db.
J. D. GIVENS, Box 3, Libson, Tex.

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Eggs and Plants. Several varieties. Best quality. Any quantity. Finely illustrated catalogue free. Address
GEER BROS., St. Marys, Mo., or H. B. GEER, Nashville, Tenn.
Please mention this paper. 5tfdb

On Sale at Half Price.

Every thing necessary to run an apiary of one hundred colonies. Outfit in good condition. Will be found as represented. Address
MILTON CONE,
6-7d **1213 VIRGINIA AVE., KANSAS CITY, MO.**

I TELL you what, Jones, **Levering Bros.** sell the best goods and at the lowest price of any one I've struck yet. The largest and best equipped

Bee-Hive Factory

in the West. The Dovetailed Hive and New Hoffman self-spacing frame a specialty. Every thing used by practical bee-keepers at wholesale and retail. Send for their free Illustrated Price List, and save money. Supply Dealers, send for their Wholesale List. Address
LEVERING BROS.,
3-14db **Wiota, Cass Co., Iowa.**
Please mention this paper.

THE WHITE PEARL CUCUMBER is a great acquisition as well as a novelty. For full particulars and seed send 25 cents to
6tfdb THOMAS GEDYE, Dayton, La Salle Co., Ill.

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CONVENTION NOTICES

The semi-annual meeting of the Utah Bee-keepers' Association will be held in Salt Lake City, Utah, April 10, 11, 1893. All interested are invited. R. T. RHEES, Sec.

The Susquehanna Co. Bee-keepers' Association will hold its next meeting at the Tarbell House, Montrose, on Thurs., May 4, 1893. All are invited. H. M. SEELEY, Sec.
Harford, Pa.

The Texas State Bee-keepers' Association will hold its 15th annual session at Greenville, on Wednesday and Thursday, April 5 and 6, one mile north of the court-house, at the apiary of Mrs. Jennie Atchley. All are invited. No hotel bills to pay.
A. H. JONES Sec., Golden, Texas.

KIND WORDS FROM OUR CUSTOMERS.

I got a knife from you last fall, and was very much pleased with it; it is a very good knife for the money, and just the thing for a whittling boy.
Carpenter, Ills., Feb. 24. EDW. E. SMITH.

I have adopted the 8-frame Dovetail hive with the improved Hoffman frame, which I will use till I can find something better. It seems to me the Hoffman frame is far ahead of any thing we have had before, and will come into general use among most practical bee-keepers. F. B. JONES.
Howard Lake, Minn., Feb. 24.

You will please find inclosed $1.00 for GLEANINGS for 1893. You need not put the big "D" opposite my address, as I expect to subscribe for GLEANINGS as long as I live, or, at least, as long as it is published; and when you and I are both dead, I ask that your successors continue to send GLEANINGS to my family.
Edgefield, S. C., March 13. G. D. MIMS.

OUR BOOK ON TILE DRAINAGE.

Familiarity with hydraulics, its literature, ancient and modern, including sewerage, land-drainage, etc., did in nowise depreciate our interest in your book on tile drainage. The appreciation of the book will appear from what follows: Inclosed find $2.00, on receipt of which please mail a copy of "Tile Drainage" to each of the inclosed 5 addresses. R. L. SELDEN.
LeRoy, Genesee Co., New York, March 4.

HOW OUR GOODS PLEASE.

The goods ordered of you Jan. 23, and shipped Jan. 27, came promptly to destination Feb. 2. I have unpacked and examined nearly every thing. Allow me to say that it is with no small degree of satisfaction that I unpack your goods and find every thing complete, while as to quality and workmanship it is simply all one could desire. Look out for an order in the spring for my neighbor bee-keepers. They all want your goods. S. FARRINGTON.
Corunna, Ind., Feb. 6.

THE NEW SMOKER.

Mr. Root:—The new smoker is a dandy, and is much better than those I bought a few years ago. It will burn green chips or any thing else. I should prefer them made without the holes under the fire-box, as the fuel burns too fast, and sparks drop on the bellows and cause it to be burned. I hope Rambler will not think his rambles are not appreciated. Look here, Mr. Editor; if you start that matrimonial department in GLEANINGS for the benefit of California bachelors, please include Texas. Next to California we will put Texas against any State for bachelors. A TEXAS BACHELOR.
Cameron, Texas, Jan. 23.

A KIND WORD IN REGARD TO "HOW TO BE WELL."

Friend Root:—I wish to thank you for the Home talk on "How to be Well." It is a very valuable paper, and I wish it could be put into the hands of every one. I have been suffering from the same troubles that you describe. We are as much alike as two peas. I have always received benefit from dieting, but never from taking medicines. There are new ideas in your paper, which I will follow out; and I hope I shall be relieved as much as you have been. I *know* it is the only correct solution of our troubles. Plenty of outdoor exercise and dieting will surely cure our troubles if we do not overwork. This is almost impossible to prevent on the farm, if one is ambitious to succeed in every thing; and you know "eternal vigilance" is the price of success.

I was at our Soldiers' Home recently, and was surprised at the amount of medicine, mostly pills, that was taken, and how little attention was paid to dieting and the proper cooking of food. It is no wonder that the American people are noted as being a nation of dyspeptics. A very small percentage of the people know how to take care of themselves so as to keep well. I get more valuable practical information from your writings in GLEANINGS than from any other source. N. P. ASPINWALL.
Harrison, Minn., Feb. 5.

TAKE NOTICE.

If you are looking for the bees that give the best profits, and most gentle in handling, try the Albinos. I also have the Golden Italians, and can furnish either variety. But if you ask for my preference I say Albino, and in my circular you can see what others say of them. Send for circular and see how cheap I sell them. I also manufacture and deal in Hives, Sections, Foundation, Extractors, and other Apiarian Supplies. 5-7d
S. VALENTINE, Hagerstown, Md

Eggs for Setting.

From B. P. Rocks, A. C. Hawkins' strain, and S. C. B. Leghorns of the very best, $1.25 per 13; $2.25 per 26. F. H. SCATTERGOOD, Winona, Ohio.

FOR SALE CHEAP, FOR CASH,
Italian bees and Queens during 1893.
Address OTTO KLEINOW,
7-8-9d No. 118 Military Ave., Detroit, Mich.

IT DON'T PAY

To depend on the comb to support the section.

My sections fold up square and firm, 7 to the foot, basswood, and 8 to the foot, white poplar; 4¼ in. square are the sizes I make. Will sell very cheap during April and May.
Sample of section and price list free. Address

O. H. TOWNSEND,
ALAMO, = = KAL. CO., = = MICH.

WANTED.—Agents to show up and sell the Pratt self-hiver; complete sample postpaid by mail for 75c; circular free. Address
E. L. PRATT, Beverly, Mass.
"Do it now." A success.

Leininger Brothers WILL SELL **Italian Queens**
And Nuclei Cheap. Send for Prices.
Fort Jennings, Ohio. 7tfdb

I WILL SELL

a few stocks of Italian bees on 7 frames in L. portico hives, at $5.00 per stock.
C. G. FENN, Washington, Conn.

HONEY COLUMN.

CITY MARKETS.

KANSAS CITY.—*Honey.*—Demand for comb honey is good. Price of 1-lb. comb, 16@17; dark, 12@14; extracted, 6@8. The stock of comb and extracted honey on our market is very light. *Beeswax*, none on the market. HAMBLIN & BEARSS,
March 21. 514 Walnut St., Kansas City, Mo.

ALBANY.—*Honey.*—This keeps coming along slowly, and sells about as fast as received, at following prices: Clover, 13@15. Buckwheat, 10@11. We have some complaints about candying, and have had a couple of lots returned on that account. Demand for extracted now falling off; but no change in prices. Dark, 7@8; light, 9@10.
CHAS. MCCULLOCH & CO.,
Mar. 22. 393-397 Broadway, Albany, N. Y.

ST. LOUIS.—*Honey.*—There is no change in prices. Extracted very scarce, and in demand. *Beeswax*, prime, 26½. D. G. TUTT GRO. CO.,
Mar. 20. St. Louis, Mo.

SAN FRANCISCO. *Honey.*—Honey is scarce at 8@8½ for extracted. Comb honey is hardly in the market, and we quote nominally, 13@14 for 1-lb. white. The prospects for the coming honey crop have improved, and we think we shall have a large crop. *Beeswax*, scarce at 24@25.
SCHACHT, LEMCKE & STEINER,
Mar. 15. San Francisco, Cal.

KANSAS CITY.—*Honey.*—The demand for comb and extracted is quite light; supply equal to the demand. One-lb. comb, white, 12@17; dark, 10@15. Extracted, 6@8. *Beeswax*, 22@25.
CLEMONS-MASON COM. CO.,
March 20. Kansas City, Mo.

CINCINNATI.—*Honey.*—No change since our last. There is no choice comb honey on our market, and no particular demand. Prices are nominal at 14@16 for best white. There is a good demand for extracted honey at 6@8c on arrival. Supply is fair, but shipments are solicited. *Beeswax* is in good demand at 24@27 for good to choice yellow on arrival.
CHAS. F. MUTH & SON,
March 20. Cincinnati, O.

BOSTON.—*Honey.*—Honey is selling fairly well, but the stock is ample for the season, as maple sugar and syrup interfere very much with the sale of honey. e are selling the best 1-lb. comb at 15@16. Extracted, 8@10.
BLAKE & RIPLEY,
March 20. Boston, Mass.

CLEVELAND. — *Honey.* — Honey in fair demand. Offered, No. 1 white, 14½c, N. Y. State. *Beeswax*, 30.
WILLIAMS BROS.,
March 20. 80 & 82 Broadway, Cleveland, O.

DETROIT.—*Honey.*—Best white comb selling at 14@15; dark and unsightly lots at buyers' prices. Extracted, 8@8½. *Beeswax*, 26@27.
M. H. HUNT,
March 22. Bell Branch, Mich.

CHICAGO.—*Honey.*—There is a steady demand for fine white comb honey, which brings 17@18; and good grades of white, 15@16. Dark is slow sale, and 11@13 is top. Extracted, very steady, and selling at 6@9, according to its flavor, body, and color. Comb honey should be forwarded at this time. *Beeswax*, 22@25. R. A. BURNETT & CO.,
March 20. 161 So. Water St., Chicago, Ill.

MILWAUKEE.—*Honey.*—This market is good for honey; and choice white 1-lb. sections wanted. The supply is small. Prospects good, that all grades will be all cleaned away before another crop. Can quote choice 1-lb. sections, 20@21; dark, 13@15; common and old, 8@10. Extracted, in barrels, white, 9@10; in cans, 10@11; dark, nominal, 7@7½. *Beeswax*, 23@25, and very choice, higher.
Mar. 20. A. V. BISHOP,
Milwaukee, Wis.

WRITE for price list of choice Italian Queens and Bees, and S. C. White Leghorn Eggs.
7-8d J. J. HARDY, Lavonia, Ga.

BUFFALO, N. Y. Unsurpassed Honey Market.
BATTERSON & CO. Responsible, Reliable,
Commission Merchants. 18tfdb and Prompt.

Muth's Honey

In packages of ¼, ½, 1, and 5 lbs.,
25c. per lb.
If sent by mail, add 12c for every lb.
C. F. Muth & Son,
976-978 Centr. Ave.,
CINCINNATI. OHIO.

Caramels.

☞In responding to this advertisement mention GLEANINGS.

Bee-Hives and Supplies
☞None can sell cheaper than I, because Minnesota lumber is cheapest. Catalogue. 7-10db
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Please mention this paper.

Bees For Sale Cheap.
My bees having wintered in fine condition, as my old reliable strain of Italians always do, to reduce my stock I will sell 50 colonies at a low price.
Send for 44-page descriptive price list of Bees, Queens, and Supplies. The very best goods at the lowest possible price. 7-tfdb
WM. W. CARY, Colrain, Mass.
Please mention this paper.

TO CANADIAN BEE-KEEPERS.
The most complete and cheapest stock of Bee-keepers' Supplies in Canada. Prices low. Satisfaction guaranteed. Send for Catalogue. References the best in the country. Address
C. A. OUELLETTE,
Manufacturer of Bee-keepers' Supplies,
TILBURY CENTER, ONT.
Please mention this paper.

J. W. K. SHAW & CO.,
Tested Queens, $1.00 each.
Light, Large, and Prolific Italian Queens, carefully reared. Untested Queens.—Special price by the dozen. Imported or home-bred mothers. 7d
IBERIA PAR. LOREAUVILLE, LA.
Mention this paper.

Oregon and Washington Bee-keepers

We have decided to give a

BIG DISCOUNT

for early orders. Write for special prices, naming quantity you can use.

POSSON'S SEED STORE,
Portland, Oregon.
6-9db

Dr. J. W. Crenshaw, Versailles, Ky.

Breeder of Italian Queens. Imported or home-bred mothers, as desired.

Untested, till July 1, $1.00; after July, 75c. Contracts solicited. **Dealer in A. I. Root's Supplies.** Grower of plants of every description. Onion Plants. Celery Plants. Send for circular. Mention GLEANINGS.
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CONCORD GRAPEVINES.

Strong, thrifty Concord grapevines, for shading bee-hives, or for other purposes, 10 cts. each; 85 cts. for 10; $6.50 per 100. If sent by mail, add 5 cts. each extra. Those sent by mail are only one year old, for the larger ones would be too heavy. The others are *three years old*, and have extra strong large roots. If over 50 vines are wanted, they had better be shipped by freight. There is not a bit of risk in sending grapevines by freight, for they can be packed so as to keep safely a month, if need be, if they are ordered early in the spring.

Send orders to **DR. MARTIN,**
Rising Sun Nurseries, Mercersburg, Pa.
5-6-7-8d Please mention this paper.

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5 BANDED QUEENS, 3 BANDED QUEENS, | **SUPPLIES of all KINDS.**

Eggs for Hatching from B. Plymouth Rocks and Brown Leghorns. Discount on early orders. Catalogue free. **CHAS. H. THIES,**
5tfdb **Steeleville, Ill.**

Root's Goods for the West.
Address Jos. Nysewander, Des Moines, Ia.

CHENANGO VALLEY APIARY.

If you want beautiful Golden Italian Queens, or from Imported mothers, send in your orders early. Tested, in June, $1.50; untested, $1.00. Strawberry-plants of the latest and best varieties cheap. Send for circular. MRS. OLIVER COLE,
6tfdb Sherburne, Chenango Co., N. Y.

READY AGAIN!

With those nice Golden Queens, reared by Doolittle's method. Untested, March, April, and May, $1.00; 6 for $4.75; 12 for $8.50. June and later, 75c each; 6 for $4.00; 12 for $7.50; 3-banded tested, $1.50. For select and breeders, write for prices. Safe arrival and satisfaction guaranteed. 5tfdb
J. B. CASE, Port Orange, Vol. Co., Fla.

A large number of fine queens on hand; yellow and prolific; ready April 15th; warranted queens, $1; 6 for $4.50; select tested, yellow to the tips, suitable for breeders, each, $2. Reference, A. I. Root. 3tfdb
W. H. LAWS, Lavaca, Seb. Co., Ark.

SOLID COMFORT PLOW. Little used. Take $30.
6-7d J. H. COLVILLE, Goshen, Ohio.

FOR A KINDS OF BEE KEEPERS SUPPLIES. ADDRESS LEAHY MFG. CO. HIGGINSVILLE MO.

In writing advertisers please mention this paper 21tfdb

DOVETAILED HIVES, SIMPLICITY HIVES,
SECTIONS, EXTRACTORS, ETC.
A FULL LINE OF
BEE-KEEPERS' SUPPLIES.
60-PAGE CATALOGUE. 1tfdb

J. M. JENKINS, WETUMPKA, ALABAMA.

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SUPERIOR GOLD-EYED NEEDLES.

Cut shows the contents of the package, half size. The bodkins, darners, etc., as shown, are, not gold-eyed, but there are besides these, four papers of elliptic gold-eyed needles such as are usually sold at 10c a paper. Our price for the pkg. is 15c, 10 for $1.25, 100, $12. By mail 1c each extra.
A. I. Root, Medina, O.

PURE WYANDOTTE EGGS FOR HATCHING, $1.00 FOR 13.
Ref., A. I. Root. J. S. MASON, MEDINA, O.

FRIENDS,

I have a fine strain of Italian bees, and my apiary will be located six miles from other bees, so perfect mating of queens is assured. Will be pleased to receive your orders. Prices are as follows:

1 untested queen,	$1.00	6 untested queens,	$4.75
3 " "	2.75	12 " "	6.50

Tested queens, each, $1.50.
Safe arrival guaranteed. Address
FRANK H. HOWARD,
6-8-10d GARDEN CITY, KANSAS.
Please mention this paper

Best on Earth.

More than one hundred thousand Bingham & Hetherington Honey-knives and Bee-smokers in daily use. Illustrations sent free.

Bingham & Hetherington,
Abronia, Mich. 7tfdb
☞In responding to this advertisement mention GLEANINGS.

DON'T purchase a SELF-HIVER until you have read about the PERFECTION in our 18-page circular. Sent free. Address 24-tfdb
HENRY ALLEY, WENHAM, MASS.
Please mention this paper.

WE OFFER
COMB FOUNDATION
WHOLESALE AND RETAIL,
AT VERY LOW PRICES.
Satisfaction and all work guaranteed.

We have ordered our mills, etc., and expect to be able to fill orders in a few weeks. We will arrange for a large capacity, and devote all our time to the business, so orders can be filled promptly. Our prices will be at least from 5 to 10 cts. per lb. below the prevailing prices of other years. We expect our foundation to equal other makes, and to excel them all in a few respects, to which we call your attention in our price list. 5-10db
BEESWAX WANTED. Write for prices.
W. J. FINCH, JR.,
931 E. Monroe St., Springfield, Ill.
☞In responding to this advertisement mention GLEANINGS.

Jennie Atchley

Is headquarters in the South for queens. Untested (either 3 or 5 bands), March, April, and May, $1.00 each; $5.00 for six, or $9.00 per doz. June and after, 75 cts. each, $4.25 for six; $8.00 per doz. Prices for breeders, and by the quantity, on application. Safe arrival and satisfaction guaranteed.
Jennie Atchley, Greenville, Hunt Co., Tex.
Please mention this paper. 6tfdb

Beautiful Golden Queens.

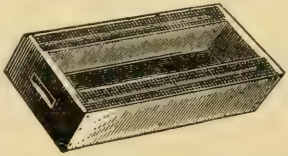
My five-banded Italians are bred from the very best of stock by Doolittle's improved methods, and mated to the yellowest of drones from selected colonies, and I guarantee them to give entire satisfaction. Untested queens are all warranted purely mated. 1 untested queen, March, April, and May, $1.15 each; $12.00 per doz. Tested, $1.50 each. Select Tested, $2.50. Guarantee prompt and safe delivery. Send for circular. W. P. CROSSMAN,
Money-order office. Ballinger, Tex.
Reference: 1st Nat. Bank of Ballinger. 5tfdb

CHICKEN-HATCHING BY STEAM

IMPROVED VICTOR INCUBATOR.
Simple, easy of operation, self-regulating, reliable, fully guaranteed. Send 4c. for illus. Catalogue. Geo. Ertel & Co., Mfrs, Quincy, Ill. U.S.A.

A. E. MANUM'S
LEATHER-COLORED
ITALIAN QUEENS

Are superior to all others for business, is the verdict of those who have them. PRICES: one untested, $1; six, $5.50; twelve, $10.00. Tested, $1.50 each. Selected for breeding, $2.50 each. One yearling, tested, *in June only*, $1.00; six, $5.50; twelve, $10.00.



THE MANUM FEEDER.

Models of Manum's new "Rapid" feeder with, full printed directions how to make, and what, when, and how to feed for best results, $1.00 by mail, postage paid. Descriptive catalogue mailed free on application. 5-12db
A. E. MANUM, Bristol, Vt.

SUPPLIES.
Large illustrated catalogue free; or send 10c in stamps for THE BUSY BEE, a book telling how to manage them.
WALTER S. POUDER, Indianapolis, Ind.
4-12db 175 E. Walnut Street.

BUY your HIVES where lumber is cheapest. That's at LeSueur, Minn. Catalogue free.
5tfdb F. C. ERKEL.

Eastern Supply House.
We furnish every thing used in the apiary, and at bottom prices. Illustrated circular free.
I. J. STRINGHAM, 92 Barclay St., N. Y.
21-20db Please mention this paper.

Cash for Beeswax!

Will pay 23c per lb. cash, or 26c in trade for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 29c per lb., or 33c for *best selected wax*.
Unless you put your name *on the box*, and notify us by mail of amount sent, I can not hold myself responsible for mistakes. It will not pay as a general thing to send wax by *express*.
A. I. ROOT, Medina, Ohio.

BUFF Cochin. BRAHMAS, Light. BEES, Italian.
Circular. 5-10db E. SHIMEL, McCuneville, O.

The Review

for March will contain a description of the "Largest House Apiary in the World, and its Successful Management," by H. P. Langdon (a most excellent article); B. Taylor will show how the cells in unfinished sections, left over from last year, can be shortened, and the combs brought to a level as rapidly as the sections can be handled; R. C. Aikin will point out the weakest point in bee-escapes—the spot where inventors need to use their brains some more; R. L. Taylor will continue his "Timely Topics," (and they *are* timely); E. E. Hasty will review the REVIEW this month; Rambler will give one of his characteristic California articles; there will be a "leader" on "Extractors and Extracting," in which will be illustrated an extractor in which the comb-baskets (four) can be reversed while the machine is running at full speed; in short, this number will not be an exception to the manner in which the REVIEW is usually packed with bright ideas and valuable information. Send ten cents; and when this number is out it will be sent together with two other copies of different issues; or for $1.00 the REVIEW will be sent from January to the end of the year. The 50-cent book, "Advanced Bee Culture," and the REVIEW one year, for $1.25.

W. Z. HUTCHINSON, Flint, Michigan.

BEES AND HONEY

By Thos. G. Newman, ex-editor of the American Bee Journal, Is a book of over 200 pages, that we send **FREE to every new Subscriber** who mails us $1.00 for a year's subscription to the old

AMERICAN BEE JOURNAL,

The Largest, Best, Cheapest, and only **weekly** bee-paper in all America. 32 pages; established 1861. Send for a **free sample copy** with description of book offer **GEO. W. YORK & CO.,**
56 Fifth Avenue, - - CHICAGO, ILLS.

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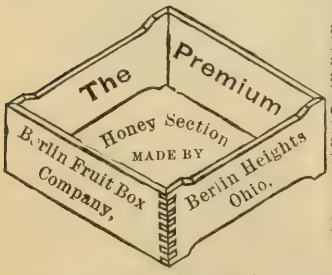
Great Reduction.

Sections at greatly reduced prices. Hives, Shipping-cases, etc., at Bed-Rock Prices. Write for free Illustrated Catalogue and Price List.

G. B. Lewis Co.,
Watertown, = = = Wis.

1tfdb Please mention this paper



BEE SUPPLIES and all kinds of Berry-packages, boxes, and baskets. We make a specialty of one-piece sections and wood separators. Address BERLIN FRUIT BOX CO., Berlin Heights Erie Co., Ohio.

3-10db Please mention GLEANINGS.

EGGS, $1.00 PER 13.

White P. Rocks, and White Wyandottes. A few fine Wyandotte cockerels for sale at $1.50 each.

6-9db **W. J. YOUNG, Scotch Ridge, Ohio.**

POLISHED

One-Piece Sections Our Specialty.

I can fill orders promptly for any width at $2.50 per M, from factory at Wauzeka, Wis., or at $2.75 shipped from Owosso, or Evart, Mich. No. 1 planer-sawed, 25 cts. less per M. Special prices on quantity lots. Other supplies kept.

7tfdb *B. WALKER, EVART, MICH.*

QUEENS & BEES. **GOLDEN and 3-Band, CHEAP!** The very BEST.

I will sell cheaper than other good breeders, to enable me to pay debts. Send for price list.

F. C. MORROW, Wallaceburg, Ark.

Closing-out Sale of Supplies

AT 25 Per Cent Discount.

As I find the management of five apiaries, run for bees, queens, and honey, enough care for one man, I have decided to close out my Supply business, and sell the surplus stock I have on hand at 25 per cent discount. If you want bee supplies of any kind, here's a chance. See my price list of Italian bees, queens, and supplies.

OLIVER FOSTER,
6tfdb **Mt. Vernon. Linn Co., owa.**

Have you Seen our **Big Blue Cat=**alogue for **1893**? **Seventy** illustrated pages. Sent **Free** to any bee-keeper. **BEE-SUPPLIES** at retail and wholesale. **Everything** used in the apiary. Greatest variety and **Largest** stock in the West. 2-12db

E. Kretchmer, Red Oak, Iowa.

In writing advertisers please mention this paper

He Is Dead to his own interests who does not use **PORTER BEE-ESCAPES.** Why not wake up and give them a trial, at least? *Then, if not satisfied, return them and get your money back.* They are used and praised by prominent bee-keepers everywhere.

PROF. COOK says: "No bee-keeper can afford to be without them."
CHAS. DADANT & SON say: "We intend to use them in all of our apiaries hereafter."
JAS. A. GREEN says: "Your escape is undoubtedly the best one made."
GILBERT BROS., East Avon, N. Y., write: "We would not be without them for $5.00 each."

Prices: Each, by mail, postpaid, with directions, 20c; per doz., $2.25. Send for descriptive circular.

R. & E. C. PORTER, Lewistown, Ill.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
PUBLISHED BY A. I. ROOT
$1.00 PER YEAR MEDINA OHIO

Vol. XXI. APR. 1, 1893. No. 7.

STRAY STRAWS

FROM DR. C. C. MILLER.

AT ROLL-CALL, March 8, 94 per cent of my bees were alive.

H. REEPEN, the versatile item-gatherer for the *Centralblatt*, is now Reepen items for *A. B. J.* He's a good reaper.

I PROTEST against your calling "W. P." an "old standby," as you do on page 227. He's not "old," and he doesn't "stand by;" he's always on the jump.

SORRY you didn't have any bees in cellar this winter, Ernest. If that cellar was the only one "available for vegetables," why wasn't the other part of the cellar available for bees?

BEE-PARALYSIS may be cured in most cases, according to Jennie Atchley, in *A. B. J.*, by putting the whole colony on new combs or foundation, and giving sugar syrup or new honey.

A PRIME SWARM takes with it the old queen. Now, suppose, just before the swarm is ready to issue, the old queen is destroyed, and a swarm issues with the first maturing virgin, is that a prime or an after-swarm?

MELILOT gets a very hearty condemnation from C. F. Muth, in the *Guide*. He thinks it has run out white clover in his locality, and says, "The English sparrow is a daisy compared to it." What do others say?

THAT MAN YORK has a pretty big contract on his hands to get up a bee-keepers' picture and biography every week in the year, but I think he'll make it in good shape, for he's got through a fourth of the year without a break.

WHY WOULDN'T it be a good plan to have brood-frames a little shorter at bottom than at top? It would make them easier to lift out, and bees will allow a greater space at lower than upper part without building comb in the space.

NON-SWARMING PLANS seem coming to the front, disputing the field with self-hivers. B. Taylor gives a plan in *Review*, keeping two colonies side by side, changing bees from one to the other every six days and cutting out queen-cells.

IN REPLY to your question on p. 227, friend Root, I have the honor to inform you that the straw in question could not possibly be the one that broke the camel's back, for the one you mention is the *second* straw, while it was the *last* straw that broke the camel's back.

IN VIRGINIA, winter losses are reported at 50 per cent, with bees flying till Christmas, and occasional flights in February. Doolittle raises the conundrum, "Why is a winter so fatal in Virginia, that would be called mild and favorable in New York?"

ARTIFICIAL INCREASE, I suspect, is more generally practiced than friend Hewes thinks (see p. 221), although it is little discussed, perhaps, because few are interested in any new modes of increase. Not one in fifty of my increase is by natural swarming.

HONEY ON A STICK is a new thing to you, says a foot-note on p. 222. You've forgotten. Who was it at fairs cut sections diagonally in four pieces, and then sold it,

"Honey on a stick,
Five cents a lick"?

LET US TRY to encourage correctness in bee-terms. I'm glad to see that, gradually, it is getting less common to call a worker "he;" but it is still common to talk about a queen *leading* out a swarm. Even so correct a work as the A B C perpetuates that error.

□TOP-BARS, a foot-note on p. 214 says, are practically ⅞ thick, as now made at Medina. Beg your pardon; for strength they may be, but not as preventers of burr-combs. That bead comb-guide doesn't pay for the thickness cut away in making it—at least, some of us think so.

WILL GRADING come up again in Chicago? Or isn't it any use? The Washington system doesn't seem to be used any more than the previous ones. It's several months old, but it doesn't seem to be used to any alarming extent in quotations, except that the *Review* uses it "as far as possible."

SULPHUR FUMES, as urged by C. F. Muth, in *Guide*, are heavy, falling to the floor, so he strongly urges that combs to be brimstoned should be placed near the floor. Brimstone's cheap, however, and in some cases it will be better to use so much that there will be no comfortable place for worms even close to the ceiling.

THE *Nebraska Bee-keeper* objects to Kretchmer's feeding by tipping back the hive and pouring feed on a tight bottom-board, and asks how he would like to eat soup off the floor. The cases are hardly parallel, Bro. Stilson, but I quit that way of feeding because, for some reason. I found too many dead bees on the ground after feeding.

THE STING of a bee is a modified ovipositor, says the dictionary. If so, did the queen originally have two ovipositors, one of which was modified into a sting? And can she be bred back into her original condition so as to lay double and sting none? Or is there danger that

her present ovipositor will be modified into another sting, so she'll sting double and lay none? Prof. Cook, is the dictionary right?

AS A NEW WAY of introducing queens, even immediately after removing the old one, a German journal instructs to dip the new queen in liquid honey and then, without further ado, to drop her among the bees. If I am not much mistaken, that was a common way years ago, but fell into disrepute for some reason, probably because too many such queens were killed by the bees.

FRIEND ROOT, what's the matter with you and that White man on p. 222? Why, you talk almost as if there was something wrong in distilleries. Don't you know that distilleries are honorable and according to law? You can "vehemently protest" till doomsday, and it won't change the law so long as you are accommodating enough to vote for legislators who will continue the law.

LANGSTROTH'S REMINISCENCES.

INTERESTING INCIDENTS OF SAMUEL WAGNER, FOUNDER OF THE AMERICAN BEE JOURNAL.

In the first edition of my book great prominence was given to utilizing every good piece of comb, and directions were furnished for draining the honey from the combs. This was found to be such very tedious and imperfect work that I studied much how to devise some way by which the honey could be more readily extracted. Often, when visiting a brother-in-law who was steward of the Pennsylvania Hospital, I was less than a minute's walk from a centrifugal clothes-wringer, a glance at which might have enabled me to solve the problem; or had any thing, in this connection, called my attention to the water flying from a grindstone, or the mud from a carriage-wheel, the idea of using centrifugal force would, in all probability, have suggested itself. Further, to show my blindness on this point I was actually using centrifugal force for emptying *some* of the contents of combs, before the advent of the honey-extractor. When I wished to get rid of partly grown larvæ I used to fill both sides of a comb, containing drones, with water; and then by a *swift* motion of my outstretched arm, first in one direction and then in another, I flirted out the water and with it went all the larvæ. While thus emptying some of the contents of the combs by centrifugal force I yet failed absolutely to take the final step by contriving some way to empty the honey by the same force.

The actual application of this principle for emptying honey was, however, reserved for a more fortunate man. An officer in the Austrian army, by the name of Hruschka, gave a piece of comb, with honey in uncapped cells, to his little son, who put it into a tin bucket which he was playfully whirling about his head with a string, and, thus all unconscious of the great results to follow, gave birth to the honey-emptier. His father, noticing that some of the honey had been thrown out of the open cells, saw at once the importance of the idea, and made a machine, a honey-emptying machine, which ought never to have been called by any other name than a Hruschka. Shall those of who know so well what was needed, and to some of whom the slightest hint might have sufficed for its invention, be mean enough to try to belittle the merits of the man who actually did the thing? So long as the bee gathers its precious sweets, his name will be held in grateful remembrance; for the practical movable frame, without this invention, would have fallen very far short of what it now accomplishes.

On page 80 of my first edition may be found these words:

Ingenious efforts have been made of late years to construct *artificial* honey-combs of porcelain, to be used for *feeding* bees. No one, to my knowledge, has ever attempted to imitate the delicate mechanism of the bee so closely as to construct artificial combs for the ordinary uses of the hive; although for a long time I have entertained the idea as very desirable, and yet as barely possible. I am at present engaged in a course of experiments on this subject, the results of which in due time I shall communicate to the public.

While I was engaged in the experiments alluded to, Mr. Samuel Wagner, with whom I was then in constant correspondence, wrote to me that he had an invention in his mind which he thought would largely increase the value of my movable frames. Suspecting that we were on the same track, and learning, after informing him of my plans, that he had made some progress in the matter, and that his experiments were begun prior to mine, I at once relegated the whole matter to him. If, like Mr. A. I. Root, to whose inventive mind modern bee-keeping owes so much, Mr. Wagner could have associated himself with a man of such rare mechanical ingenuity as Mr. A. Washburn, he would probably have perfected his invention of artificial comb foundation, not only before Mr. Root's grand success with his rollers, but before any thing had been attempted in this line by European bee-keepers.

Perhaps no better place can be found to pay a deserved tribute to the memory of the man who did so much for the promotion of American apiculture. I have already mentioned how I obtained from Mr. Wagner my first knowledge of Dzierzon; and the following extract from his letter to me (see p. 18 of the 1853 edition) will show how he first became acquainted with my invention.

YORK, PA., Dec. 24, 1852.

Dear Sir:—The Dzierzon theory, and the system of bee-management based thereon, were originally promulgated, *hypothetically*, in the "*Eichstadt Bienenzeitung*," or bee-journal, in 1845, and at once arrested my attention. Subsequently when, in 1848, at the instance of the Prussian government, the Rev. Mr. Dzierzon published his "Theory and Practice of Bee Culture," I imported a copy, which reached me in 1849, and which I translated prior to January, 1850. Before the translation was completed I received a visit from my friend, the Rev. Dr. Berg, of Philadelphia, and in the course of conversation on bee-keeping I mentioned to him the Dzierzon theory and system as one which I regarded as new and very superior, though I had had no opportunity for testing it practically. In February following, when in Philadelphia, I left with him the translation in manuscript, up to which period I doubt whether any other person in this country had any knowledge of Mr. Dzierzon. Except to Dr. Berg I had never mentioned it to any one, save in very general terms.

In September, 1851, Dr. Berg again visited York, and stated to me your investigations, discoveries, and inventions. From the account Dr. Berg gave me, I felt assured that you had devised substantially the *same system* as that so successfully pursued by Mr. Dzierzon; but how far *your hive* resembled his I was unable to judge from description alone. I inferred, however, several points of difference. The coincidence as to system, and the principles on which it was evidently founded, struck me as exceedingly singular and interesting, because I felt confident that you had no more knowledge of Mr. Dzierzon and his labors, before Dr. Berg mentioned him and his book to you, than Mr. Dzierzon had of you. These circumstances made me very anxious to examine your hives, and induced me to visit your apiary in West Philadelphia last August. In the absence of the keeper, as I informed you, I took the liberty to explore the premises thoroughly, opening and inspecting a number of the hives, and noticing the internal arrangements of the parts. The result was, I came away convinced that, though your system was based on the same principles as Dzierzon's, yet your hive was almost totally different from his in construction and arrangement; that, while the same ob-

jects *substantially* are attained by each, your hive is more simple, more convenient, and much better adapted for general introduction and use, since the mode of using it can be more easily taught. Of its ultimate and triumphant success I have no doubt. . . . It, in fact, combines all the good qualities which a hive ought to possess, while it is free from the complication, clumsiness, *vain whims*, and decidedly objectionable features which characterize most of the inventions which profess to be at all superior to the simple box or the common chamber hive. . .

Very truly yours,

Rev. L. L. Langstroth. SAMUEL WAGNER.

As soon as Mr. Wagner became acquainted with my hive, instead of publishing his translation of Dzierzon, for which he was then in negotiation, he urged me to write a book which he believed would, with my movable frame, do more for the promotion of American bee culture than any thing from abroad. Being an excellent German scholar, and very familiar with both ancient and modern apiculture, more especially with all that could be learned from German sources, he placed all his varied information at my command absolutely, without money and without price, and labored with untiring zeal to make my book and hive a success. Seldom do we find such an admirable example of rare magnanimity and disinterestedness.

Visiting him at intervals, and corresponding with him frequently, he kept me posted up in every thing occurring in Germany which was of interest in our favorite pursuit. His large library, so full especially in the German literature of bee-keeping, was thoroughly at his command, and he could turn at once to book or periodical for information on any point that might come up for discussion. L. L. LANGSTROTH.

Continued.

WHAT SIZE OF FRAME SHALL WE USE IN QUEEN-REARING?

DOOLITTLE PREFERS THE REGULAR ONES.

A correspondent writes: "I am thinking of going into the queen business, in a limited way, this year; and, if prosperous, increase the business till the most of my time will be employed in it. What size of frame would you use in the nucleus hives—small ones or sections, as recommended by Pratt and others, or those of the same size I am using in my regular hives?"

After years of trial along the line of which is the best size of frame to use in queen-rearing, I have failed to find any special advantage in a small frame, while with me there are many disadvantages: therefore I have come to the conclusion that it is the part of wisdom to use the same size of frame in the nucleus hive that we are using in the hive which we have adopted for general use in the apiary. As we are used to handling these frames we can handle them more rapidly, and with less injury to the bees and combs, than we can those of an odd size, thus saving time in our work, and avoiding that irritation to the bees which causes them to annoy their keeper by following him around and trying to sting him and every thing else that happens near the hives. With me it is much easier and more expeditious to handle one or two full-sized frames than it is three or four small ones. Then the bees work more to our profit where the regular size of frame is used. If any comb is built by the nuclei it is in just the frames we want it, and always of the size of cells we wish, as these smal colonies build only worker comb, where the young queen is left with them long enough for them to build comb. Where I have had combs in which the mice have gnawed holes, or the bees have made holes in them by cutting out moldy pollen, or in which there happens to be drone comb of more or less amount which I have removed, I always give them to these nuclei when forming them, and, as soon as the young queen commences to lay, the bees will commence to build comb and repair these places if honey is coming in from the fields, or if fed when no honey is to be obtained. By leaving the young queen with them the length of time required, we have our combs all made as good as those built out on foundation, save the cost of foundation and the fuss of putting it in the frames, while such mutilated combs are just as good to form nuclei with as whole combs. By a little looking-over of our combs each year, sorting out all those not being quite up to the standard, and using them as above, all the combs in the apiary can be kept in perfect order for all time, unless the cells should become so filled with cocoons as to become too small to raise bees in, a thing which has not happened in my apiary during the past twenty-four years.

Again, if we use the regular size of frames, all the honey stored in these will be right where it will be of use to the bees of any colony in the apiary, either for spring, summer, or winter, so that we do not have to store away a lot of combs and honey at any time of year because it is not in shape for use. In connection with the regular-sized frame I would always use the regular-sized hive for nuclei. Why? Because in this way we have nothing which will be a loss to us should we not be prosperous in the business, as may happen, as is hinted at by our correspondent when he says, "If prosperous," etc.; and by using the regular hive we are ready to unite for winter on any stand we desire, without changing hives or any thing of the kind, or can build up any nucleus into a full colony at any time.

But, as I consider it, the greatest advantage in the full or regular-sized hive comes in not having our nuclei robbed out occasionally, as is almost sure to happen with some of the weaker ones, where small hives are used. Such robbing causes a general demoralization of the whole apiary, often to such an extent that the bee-keeper almost wishes he had never known such a thing as a bee. By using the regular-sized hive, and placing the nucleus on one side of it, while the entrance is at the other side, no nucleus that is large enough to hold a queen to advantage will ever be robbed out, and smaller than these should not be used. To help the reader to understand better, we will suppose that the regular hive is twelve inches wide inside, and that the entrance used is cut from the bottom of the front board the whole length of it, and that the hive fronts south. Form your nucleus on the east side of the hive, using two combs; and next these combs draw up the division-board or dummy, which should allow the bees to run under the bottom of the same. Now close up all of the entrance except one inch in length at the west side of the hive, and you will have it as I use them, and I have not had a single nucleus robbed since I found out this plan.

Now, suppose I wish a nucleus in the next hive, on the same row in the apiary. In this hive I place the two frames and dummy next to the west side of the hive, while the entrance is on the east side, the conditions being the same as relating to the prevention of robbing, while the doorway to each hive is not at all similar. The next hive is fixed like the first, the next like the second, and so on, to the end of the row. In this way the young bees do not mix; and in returning from their wedding-flight, no queens are lost by entering the wrong hive, as used to happen with me when I used an entrance in the same place with all the hives in the apiary. I consider this far preferable to painting the fronts of the hives of different colors, laying sticks of wood about the hives, etc., as has been

recommended so many times in the past. If the nucleus becomes stronger than is profitable on the two frames, move out the division-board and give them an empty frame with a starter of comb foundation, and see how quick they will fill it with beautiful worker comb; if too weak for the two combs, take away one and draw up the division-board, thus always working to the best advantage, and making every thing done by all count on the right side of the ledger page.

As this article is already long enough, I will tell some other time how I keep the nuclei in a hive, how I double them for winter, etc.

G. M. Doolittle.

Borodino, N. Y., March 17.

[We experimented somewhat with small frames for queen-rearing, and, after taking every thing into consideration, we came to the conclusion that the advantages are by a long way emphatically in favor of the regulation frame used in the apiary. Of all the nuisances in the yard it is to have two or more sizes of frames. Doolittle's points are all well taken, and if there is any subject upon which he can speak with assurance it is this one.]

ITEMS AND QUERIES.

HOFFMAN FRAMES; SHALLOW HIVES, ETC.

Bees are wintering badly, and suffering from disease, mainly, I think, on account of the cold unfavorable autumn, which confined them too closely to their hives.

I may not understand the new Crane smoker from the description in Gleanings; but if I do, it seems to me you might remedy the difficulty of swelling valves by immersing them, or, if need be, all the woodwork, for a minute or two, in boiling or nearly boiling linseed oil, thus making them moisture-proof; or shellac them well.

I am also informed that one of the greatest difficulties connected with the regular Hoffman frame results from the swelling of the close ends of the frame-tops, and the closed upper ends of the uprights during damp weather, and from moisture absorbed in wintering. Now, could not that difficulty also be remedied by dipping the frame-tops, or upper corners of the frames, for a few moments in this hot linseed oil?

Mr. Doolittle tells us of losses from wintering bees under the snow. I once tried that, and lost every colony of bees I possessed; and if any one wishes to get rid of an apiary "with neatness and dispatch," I can recommend this plan for doing it. And I once lost my whole apiary by wintering them in a cellar which proved too cold.

I wish to ask a question, to which, in all my 30 years' apiarian experience, I have never yet received a satisfactory answer. It is this: In the spring I find colony No. 1 very weak. No. 10 is very strong, and could spare some bees to aid No. 1. Now, the question is, how to give No. 1 a share of the bees (old bees and no brood), from No. 10, without reversing hives and without removing No. 1 from the home.

For two years I have been experimenting with a few hives, with L. frame but 7 inches deep and 10 frames to the hive. I am pleased with the hive, both for summer and winter; but my experiments are not conclusive, owing to the fact that both years were very unfavorable honey years.

I am rather surprised to learn to what extent, and for how long a time, shallow hives have been in use. I was not ignorant of the fact of their use to some extent, for 30 years ago I had in my apiary a specimen hive made of fencing boards 6 inches wide; and the hives, or sections of the hive, 12 inches square. It was as truly a divisible hive as the Heddon; but it had only top-bars instead of frames. The *modus operandi* was to raise up the hive and add these sections from below as required, and in the autumn remove sections full of surplus honey from the top. The top of this little hive was covered with a pane of glass 12 inches square, with a board about 16 in. square laid over the glass, and through this pane of glass I first saw a queen.

Feeling much interested in Carniolan bees, although I have never tried them, I was deeply interested in Mr. F. Benton's paper read before the National Association at Washington; and wishing to know more about them, and about their natural habitat, Carniola, that I might the better judge of their hardiness, I took the liberty of writing to Mr. Benton for some information upon these subjects, endeavoring to couch my queries in such language as would admit of brief replies. But instead of taking advantage of this fact, Mr. Benton very kindly wrote a reply so generous in length, so interesting and instructive, that I feel sure you will agree with me that it is much too good to be limited to an audience of one. Hence I inclose it herewith; and should you not find room for both, then please consign this to the waste-basket and give us Mr. Benton's.

Excelsior, Minn. J. W. Murray.

[We have already arranged the automatic check-valve of the Crane smoker so that it will give no trouble from dampness. With regard to the Hoffman frames, there need be no difficulty from wedging up tight, providing the wedge itself is inserted midway between the two ends of the division-board or follower. As the latter forms a sort of spring pressure against the sides of the Hoffman frames, no trouble will result from swelling. As to how to get the bees from a strong colony into the weaker one and make them stay, we would suggest that, if you place a large portion from the former into the latter, a large enough share will stay, although, of course, some of them will go back. If this is done before the bees have much of a chance for flight in the spring, the percentage that will stay in new quarters will be still larger.

We were particularly interested in the shallow brood-chambers, referred to by Mr. Benton in his address at Washington; and it was our purpose to get further facts from him. But, fortunately, you have secured just the information desired, and we are sure that it ought not to be confined to a single individual, when, in fact, the whole bee-keeping fraternity will be interested. We take pleasure in presenting it just as it came from Mr. Benton.]

BEE-KEEPING IN CARNIOLA.

FULL PARTICULARS IN REGARD TO HOW THE SHALLOW BROOD-CHAMBERS ARE AND HAVE BEEN USED FOR CENTURIES IN THAT PROVINCE.

United States Department of Agriculture,
Division of Entomology.

Mr. J. W. Murray:—Yours of the 23d has just been received. I take pleasure in furnishing the information asked for, and also in adding some other particulars that may be of use and interest to you.

The hive which, for several centuries, has been most commonly used in Carniola is about 6 inches deep (inside measurement), 36 inches from front to rear, and 12 inches wide, no

frames being used. These hives are placed in bee-houses, each tier of hives resting on separate stringers of its own so as to be removable, by sliding out at front or rear, without interfering with the others. There are generally six or eight tiers—often fifty hives in each tier. The rear end of each hive (occasionally the front end instead) is removable for the purpose of feeding, introducing queens, etc., while, to get at queen-cells, the bottom is taken off—the latter being commonly fastened by hand-made, wedge-shaped nails that are easily pulled. Frame-hives are not popular, the few bee-keepers who have tried them not having, except in rare instances, understood their advantages. But frames, when used, are mostly shallow—from 6 to 8 inches only in depth, and are placed crosswise of the hives, being removable from the rear end.

THE "SHAKE-OUT" FUNCTION AS PRACTICED BY THE NATIVE BEE-KEEPERS OF CARNIOLA.

There is in Carniola, on the whole, very little manipulation of combs or interference with the interior of the hives beyond the cleaning of the bottom-boards, feeding (which is diligently practiced), and the supplying occasionally of a queen or a queen-cell to a hive that has through accident become queenless. The native bee-keepers do not often have occasion to hunt out queens; but when they do (most of the hives, as already stated, being without frames), they can only remove the bottom-board and shake out the bees. They do this by main strength, taking hold of the box in the middle, and giving it several violent jerks downward. But as the main cluster of bees (especially in the fall, or in weak colonies, after-swarms, etc., or in such as have stored the rear end of the hive full of honey) is generally in the front end of the hive, I was able to adopt, and to show the native bee-keepers in many places, much to their delight, a far easier way; namely, the plan of holding the back part of the hive between my knees, while I grasped the sides about six inches from the front end and gave two or three quick downward jerks, each followed by a quicker upward motion, thus landing about all—oftentimes *all*—of the bees on the ground. In this way I often captured from these box hives, and caged in mailing-cages, 30 to 40 queens in two or three hours.

Migratory bee keeping is followed extensively in Carniola. Hives are taken part way up the mountain-sides to get the spring yield from heath blossoms (*Erica*), and to the plains for the buckwheat harvest. About 75 of the flat hives are loaded at one time on a swinging-platform wagon, and moved at night.

NATIVE HOME OF CARNIOLANS.

The Duchy of Carniola (*Herzogthum Krain*), as it is called, is a province about three-fourths (3857 sq. mi.) as large as Connecticut, situated in the southwestern part of the Austrian empire, where the Tyrolean Alps bend southward. The main railway line (*Suedbahn*) from Vienna to Trieste passes through the center of Carniola, and the *Rudolfsbahn*, following down the Save River from the northwest, joins the first-mentioned line at Laibach, the capital of the province, a city of about 27,000, situated near the center of the elevated plain which, sloping gradually to the southeast, constitutes the greater part of the surface of Carniola.

This plain is some 300 to 400 feet above the sea-level, in the southeast of Carniola, while at Laibach it is nearly 1000 feet above that level, and rises as one proceeds northward in the valley of the Save. The latter narrows rapidly, being bordered on the east and west by mountain-ranges — the Carnic Alps, whose peaks range from 2000 to nearly 10,000 feet in height, the culmination being near the northwestern point of the province, whence the two ranges proceed, and where the Save enters by a narrow pass. As may be imagined, the winters, especially in the more elevated portions in the northwest, are rather long and generally severe. The snows are very deep in the mountains—a fall of three or four feet at a time frequently occurring. I have known the mercury to reach 20° below zero Fahrenheit. There is much humidity in the atmosphere, both winter and summer—largely, no doubt, because of the nearness of the region to the Mediterranean Sea, and in summer to the constantly melting glaciers of the mountains which feed many streams, and to frequent and often rather long-continued rains. The summers are, in fact, cool and moist, clouds are frequent, and the air is often cooled off very suddenly by winds laden with fog, or at least cold, which sweep down from the mountains. At such times—particularly in the spring, and again in August during the buckwheat harvest (it is always much cooler after Aug. 15th than before), the ground in front of hives of bees is often literally covered with the chilled workers, overtaken within the space of a few moments, when attempting to regain their hives. The race is very prolific, and recovers with great rapidity from such disasters, though, of course, when occurring at the opening of a given harvest the latter is not of much use so far as securing surplus honey is concerned.

BEE-HOUSES IN CARNIOLA.

The bee-houses are inclosed on three sides, and the hive-fronts fill out the fourth side. A space of about five feet is left at the rear of the hives, and a door opens at one end into this, while at the opposite end there is usually a window closed by a wooden shutter. The bees are wintered in these houses by stuffing hay, forest leaves, moss, or something similar, in between the tiers, of hives, at the ends of the tiers, above, below, and against the back ends of the hives, the material in this latter place being held in position by boards or quilts. During very severe weather, and also when bright sunlight might attract the bees out upon the snow, a wooden shutter, like a trap-door, is let down from above so as to close the whole front. But this does not fit very closely, being roughly made.

The sides of the hives touch each other. The tiers sometimes do, but usually each tier rests on pieces of scantling which run from one end of the bee-house to the other—one in front and one at the rear, so placed that the hives can be readily slid in free from each other, and so the fronts will just fill the space between the scantlings. Tops of hives are nailed on, except in the small number of instances in which frames are used in these long hives, when the tops are generally hinged. Occasionally surplus honey is obtained in caps such as farmers place on box-hives in this country, the cap, in this case, being placed over a hole in the top of the Carniolan hive the same as with us. The use of such a cap is exceptional, especially as the hive with cap occupies the place of two long flat hives. Most of the honey is obtained by "taking up" (sulphuring) a certain proportion of the colonies in the fall. Sometimes the cleaner, newer combs are placed by themselves and allowed to drain tolerably dry in a warm room, the product, of course, being similar to extracted honey. It is sold as drip honey (*Tropfenhonig*), while the most of the combs, having been crushed in casks or vats, are permitted to drain off a dark, rank, pollen-laden liquid which they use in baking honey-cakes in, in preparing various drinks, as well as to feed bees. In truth, it is fit for nothing but this

last use. Very little honey is eaten except as it is combined in different cakes, gingerbread, etc., and syrups are also unknown, as are buckwheat cakes, warm biscuit, etc.

Stimulative feeding is practiced in the spring quite early, with a view to getting early and frequent swarms. The honey (*Stampfhonig*) used for this purpose contains much pollen, and is, therefore, better than cane sugar as a stimulus to brood-rearing. The number of stocks is usually trebled or quadrupled by August, and all are taken to the buckwheat fields of Central and South Carniola, where strong ones are generally able to acquire a weight of 60 or 70 pounds—bees, combs, honey, and pollen. But those sulphured, probably do not yield, on the average, more than *a third* of this, as all very light after-swarms are included in the condemned lots, since, of course, such would not winter. But after-swarms weighing (combs, bees, and honey) twelve to fifteen pounds, are frequently wintered. But those heaviest in the fall are, other things being equal (age and quality of queens, character of combs, populousness, etc.), the ones that, by all odds, winter best.

Naturally, where such a system of bee-keeping is followed, the extractor and sections being known to very few, and the popular idea being that honey could be harvested *only in the fall after* buckwheat had done blossoming, it was an astonishing thing for some one to show a quantity of light-colored honey from locust-trees, from chestnut, or even the amber-colored honey from horse-chestnut and from pine-trees, all gathered and harvested before July. And the absence of the buckwheat flavor was considered remarkable, as *honey* without that was unknown, so to say. Nor was it clear why "my bees made honey" that was free from the rank flavor of pollen and much other material even less appetizing, which their crushed-comb product always had.

Frank Benton,
Apiarist U. S. Dept. Agriculture.

HINTS TO BEGINNERS.

HOW TO START; HOW TO WINTER; COMB HONEY, ETC.

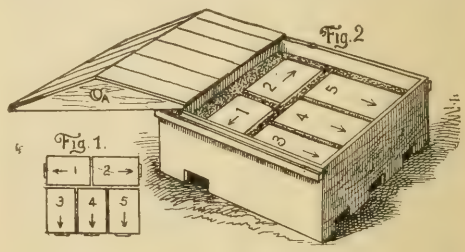
Dear Cousin Will:—I am glad to learn that you are to have some bees. I think five colonies just about the right number to start with, as it will pay you to buy an extractor and some other conveniences for that number. Don't be in a hurry to move them home. Wait till it is warm enough so they can fly next day after moving. When it is warm enough so the bees work on the maple will be a good time. In the mean time you should get a good hand-book on bees, and post up. Root's A B C is the best thing for beginners that I know of. After you have read it through, don't lay it up and forget you have it. It should be your daily adviser. In my first season with five colonies my A B C book was consulted every day—yes, many times a day; and, as a result, I got $130 for my crop, besides increasing the five to thirteen, all of which wintered well.

As it is only three or four miles, you can drive over with your spring wagon, toward night, when the bees are all in. Tack a strip of wire cloth over the entrance, and tie on the cover and bottom securely with tarred twine. Now drive up with your wagon, and, having previously found out which way the frames run in the hives, load them so the frames will be crosswise of the wagon; then the jerks will be endwise instead of sidewise. The jerks sidewise in a wagon are worse than endwise.

On arriving home you should place them where they are to stand. Make a separate stand for each hive. An inverted box six inches deep and two or three inches longer than the hive, will do. Don't put them too near the driveway, nor in the calf-lot nor hen-park; and don't put them away out of sight behind some building, or back in the orchard.

A little shade is a good thing, but it should not be too dense. Have them in plain sight of the house, especially the kitchen and sitting-room windows.

To give them cheap protection from the sudden changes of temperature this spring, I would group them close together like the accompanying sketch; you can then make an



WINTER CASE FOR FIVE COLONIES.

outer rim of rough boards, two or three inches larger all around than the group, and pack with dry sawdust all around and in all crevices between the hives. A sort of mattress can be made of burlap stuffed with a mixture of sawdust and excelsior or straw. This will do to cover the tops of the hives, and you can make a good roof of shoe-boxes, which you can buy cheap.

When it is settled warm weather, along the last of May, this outside arrangement is to be taken off and the hives spread about a foot and a half apart.

But to return to the present. You want to order your supplies and implements right off.

In addition to your hand-book, already mentioned, you want, first, a good smoker. Bingham's is the best and most durable, but Root's can be had for less money, and is good for the price. Then get two yards of cotton tulle and make two veils. You will find directions in your book. Then get ten one-story hives, with wired frames and wood-zinc queen-excluders. You want 50 extra wired frames for your old hives, to use in the upper stories, or, if they will not fit, you must get 5 more hives. Now you want light brood foundation—enough to fill all these frames full, perhaps 15 lbs. You also want a wire-imbedder to fasten it in with.

Now, there are many implements for sale; but I will just mention those I think most useful. These are, first, a honey-extractor, and I recommend the new Cowan; also a wax-extractor. The cheap 35-cent one might do if you want to economize; and half a dozen each of West's cell-protectors and cages. Then you will want a comb-bucket. Tin is the best, but you can make one of wood, if well made with dripping-pan in the bottom.

To hold your honey, I know of nothing cheaper than large open tin cans. Mine hold 200 lbs. of honey, and nest like sap-pails. They cost me $1.25 apiece. One of these does nicely for an uncapping-can. I have a large sieve made to just fit the top. The sides are tin, and the bottom is wire cloth, 4 meshes to the inch. A wooden rack is made to go across the top to hold the comb while uncapping. This lets the honey drain into the can below, while the cappings remain in the sieve.

You will want a knife with a slim blade, for

cutting out cells; a pair of small sharp scissors to clip queens' wings, and a pocket mirror, small enough to carry in your vest-pocket. This last is to help you find a bee when it is trying to sting around your neck, where you can't see without the glass.

I have said nothing about sections, because I would not advise you to try to raise comb honey the first year. I have mentioned nothing but what I think you need. Some other things might be added, but I don't advise you to spend a bit more on your bees than necessary until they repay you. You might save a little more by making your own hives. A neat light hive can be made from shoe-boxes. Get your frames from the factory first, and make your hives to fit.

But with all your economy, don't scrimp on foundation, and you will secure *straight worker combs on wired frames;* an investment you never will be sorry for as long as you work with the bees. CHALON FOWLS.

Oberlin, O., Mar. 10.

[These instructions are plain and right to the point, and we are glad to add our indorsement to them.]

A BACKWARD SPRING IN CALIFORNIA.

BEE-PARALYSIS CAUSED BY CONDITIONS OF CLIMATE RATHER THAN QUEENS.

We are having a cold, backward spring. While the roses are in bloom at Ventura, we can see the mountains back of the Matilija covered with snow, and that, too, only about fifteen or twenty miles off—more snow than we have had for a number of years. Bees are consuming great quantities of honey for brood-rearing; and if this weather continues much longer, many colonies of bees will perish for want of stores.

Bee-paralysis (nameless bee-disease) has its sway during this damp cold weather. Having considerable of it to contend with every season, I have noticed that it was worse during wet and foggy weather. Warm dry weather seems to be beneficial to the disease. Also when we have a good honey-flow from the sages, or best honey, it gradually disappears. I have been experimenting, by moving queens from afflicted colonies to an out-apiary, a few hundred feet greater elevation, nine miles further away from the coast; and the few queens moved thus far have produced good healthy bees. Apiaries located far away from the coast are the least troubled with it. As you advance toward the coast, the worse it is. This proves to me that it is not *all* caused by the queens; and I believe that the forage and weather have a great deal to do with it, although I have also cured it by queens raised from afflicted colonies and otherwise. My neighbor, Mr. Louis Walker, has lost a number of hundred colonies by this disease, and it nearly discouraged him from continuing in the business.

UNPROFITABLE FEEDING.

I have a number of friends who are feeding colonies in three-story hives, which is a great mistake for this time of the season in California. It is much better to contract the brood-chamber to one story, if possible, and save an expensive waste of honey.

Those having young drones flying should now commence preparing for young queens, to supersede all old queens, and have a surplus on hand at the proper time for young queenless swarms. Clean all bottom-boards and the frames, for easy and rapid manipulation, for these burr and brace combs are a hindrance to the greatest success.

HOW TO PREPARE BEES FOR MOVING.

For those who intend moving bees on lumber wagons, over rough roads, I would suggest putting from two to three feet of loose straw into the wagon-box; load all hives firmly together. Fill gunnie sacks half full of straw; cushion the outer edge between hives and side-board and spaces. Bind well, and a considerate driver is all that is required to make all go well.

Ventura, Cal., Mar. 14. M. H. MENDLESON.

SIMPLE METHODS FOR DETECTING ADULTERATION IN HONEY AND WAX.

The following is a translation which we make from the *Bienenvater*, a German bee-journal published in Vienna, Austria. While it shows a rather bad state of affairs on the other side of the pond, we are glad to note that it also offers a practical antidote for those evils. We would refer our readers to page 275 for an account of our own experiments with some honey which we had reason to think was not pure.

"Naught so fine has e'er been spun
But came at last to light of sun."

Honey and wax, those costly natural products which for thousands of years have played so important a part in domestic economy, have, in later times, been greatly debased. In place of honey we have sugar; and in lieu of beeswax we have mineral wax—ceresin and ozokerite. Still, honey and wax are used for many purposes; and although the price of honey, as compared with that of other sweets, and the price of beeswax, as compared with that of mineral and vegetable wax, is but a trifle higher, yet it is now the case, as it has been for years past, that greedy men have adulterated the pure articles with an inferior product, and sold them as genuine. This adulteration of both of these products is already the regular business of so many, that there are in Switzerland several establishments now engaged in the production of artificial honey. This so-called Swiss honey contains but very little real honey, but mostly potato or starch syrup. These Swiss honeys are easily detected by very simple means. Last year, however, there started up in Germany a factory for the production of a new honey product called sugar honey, the same comparing perfectly, in its chemical features, with bee honey; and a skillful chemist (a sworn official expert) could not prove it to be mixed. We hope, however, that chemistry will ultimately be able to succeed in showing this product to be what it is. The other principal adulteration of honey consists in mixing pure honey with glucose (starch syrup, potato syrup, beet sugar, corn syrup), carrot juice, flour, glue, tragacanth, and water. Wax is mostly adulterated by adding tallow, ceresin, stearine, and vegetable oils.

It is possible for chemistry to prove adulterations in wax by employing very simple methods, as a general thing; but in some mixtures, however, the operation is very complicated, and on that account they are not touched on here.

HOW TO DETECT ADULTERATION IN HONEY.

1. Adulteration with glucose.—Take a tablespoonful of the honey to be tested; pour it into a small bottle; then add three spoonfuls of pure spirit, and shake the whole thoroughly together. In about a quarter of an hour there will form in the bottle a cloudy, whitish sediment; and from this, one may be sure the honey is adul-

terated. Conifer honey, as also that from fir and pine, yields a slight precipitate of dextrine. Dr. Haenle, of Strassburg, can, by means of the polariscope, very easily detect the adulteration of conifer honey by its right-handed rotation.

2. *Adulteration with flour, starch, etc.*—Pour into a tumbler, partly filled with honey, a few drops of the tincture of iodine, stirring it thoroughly with a glass rod. In a few moments it will, if adulterated, be of a bluish color. If the honey is greatly diluted it will form on the bottom of the glass a sediment of a deep sky-blue color.

3. *Adulteration with flour.*—Warm the honey till it is quite thin; let it cool off and add very cold water, constantly stirring till the flour separates from the honey and falls to the bottom, where it is easily recognized.

Additions of flour can be easily detected in such honey by warming it. It melts very slowly and burns easily.

4. *Adulterations with glucose.*—Mix honey with boiling water. If it has not an aromatic smell, but smells of starch or fusil, it is adulterated with potato or starch syrup.

5. Adulteration with glue can be easily detected by an addition of tannin. The latter is often used by wine-dealers to render red wine astringent. When used as an adulterant it forms a yellowish-white sediment.

6. The addition of water can be very easily demonstrated by the use of Schachinger's honey-scale. The specific gravity of pure extracted honey is 1.39 kgs. per liter. Watered honey soon ferments and easily becomes sour, and this is always a good means of detecting adulterated honey.

7. Artificial honey, known as Swiss, Alp, and grape honey, etc., are easily recognized—1. By the presence of sulphuric acid; 2. By a grating taste; 3. By the fact that it never crystallizes, but remains permanently liquid.

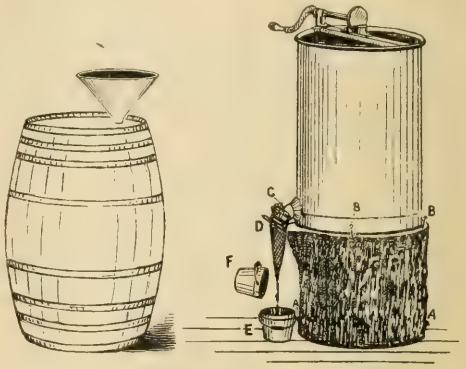
EXTRACTORS.

CRITICISMS AND SUGGESTIONS FROM A WISCONSIN BEE-KEEPER.

Friend Root:—I see quite frequently comments upon different honey-extractors by different writers, showing the difference in what they accomplish. I will try at this time to show something of the *use* and *abuse* of the extractor.

First, I wish to assert that more bees are killed annually by the ignorant use of the honey-extractor than by all other causes combined. I frequently meet bee-keepers who raise from 500 to 5000 lbs. of honey, wanting to change their little Novice machine for one with a greater capacity. Right here I wish to say, don't do it. If you have a machine, and can not sell it for what it is worth, *fasten it down* and wear it out. You can extract with it all the honey you produce, and that is all you would do with a $25 machine. The weak point with the Novice, as well as nearly all other machines, is the cast-iron honey-gate; hence we see so many corncob and rag honey-gates. Why can we not have a malleable or wrought-iron gate? No one would object to the difference in cost. The above is a very disagreeable feature.

Another bad feature is the way a large portion of such machines are fastened down before commencing work. It is a truly comical sight to see the machine placed upon an old rickety bench or box, with a heavy comb in one side and a light one in the other; then see the operator chase the thing around the room in disgust. But this is the fault of the operator and not the machine. The bench that I prefer is made by sawing off a block from a hard-wood log 20 inches long. I saw it off where a knot or limb puts out, so as to make a set-off for the honey-gate—thus:



This block is very heavy, and, if sawed off square, and nailed to the floor, as shown by A, A, A, and the machine fastened to the block by screws at B, B; then if the floor is solid I will insure the machine to "stay put" and remain firm. The illustration also shows my manner of straining honey. The little strainers you send out with your machines I always give to the little daughter to make a hoop-skirt for her doll, for I want one three times as large, and running to a point. You will see the strainer is tied to the faucet at C, with a hole D, through which is passed the honey-gate so it can be closed or opened at will; E shows the pail into which the honey runs, and F shows the manner of tipping the pail under the stream when the pail E is full; G is a tunnel holding 1½ pails of honey, which conducts it to the barrel after it is strained.

In the season of 1891, my wife, with a hand to help her and another to empty the honey, extracted, with one of Novice's little machines, 2080 lbs. in ten hours, while myself and son, 14 years old, with a hand to help, traveled 9 miles and took 1650 lbs. with the same kind of machine. I doubt whether much more would have been accomplished with larger machines.

I think I shall want one of your new Cowan extractors, and I want one so the weight of the machine won't break off the honey-gate. Machines that are drawn over the country, in a wagon, should have a better honey-gate.

Viola, Wis., Feb. 21. M. A. Gill.

[Many of your points are well taken; but, friend G., it seems to us that it is a great deal of trouble and unnecessary labor to have two little pails to transfer honey into the barrel, to say nothing of the danger from daubing and the labor of handling the pails of honey. If you are going to put honey into the barrel at all, why not put the bung of the barrel directly under the honey-gate—letting the strainer, of course, run into the bung. But, as a general thing, honey should be ripened a little before it is barreled up; and, if we are correct, most of the extracted-honey men run their honey into shallow vats, keeping the same in a dry, warm, protected place for some length of time. In California the extractor is set on a side-hill, a pipe connects the honey-gate with a tank a little lower down, but high enough to allow the honey to run into a wagon loaded with square cans.

Speaking of the size of extractors, there is no

doubt that a little non-reversing machine will extract all the honey that most bee-keepers can produce; but the fact should be borne in mind that *labor* is an expensive item, and one may lay out more money in handling a crop of honey, in a single season, with a small non-reversing machine, than a large reversing extractor would cost. It is not a question whether a small machine will do the work, but it is a question which machine will do it the cheapest, considering the first cost and interest on the money.

Our extractors have of late been greatly improved, and the honey-gate has been made much more substantial; and we contemplate making the gate proper of malleable iron.

In regard to the Novice and Cowan, as the latter costs but a trifle more, it would not pay a bee-keeper who has a thousand pounds or more to extract, to fuss with a non-reversing machine; and reports are coming in, showing that the Cowan reversible does not throw a spray of honey over the can. The reason for this is, that there is no center-shaft nor bracework that forms a sort of propeller-wheel to make an upcurrent on the inside of the can. Reversible machines, besides being much more rapid, have this as a distinctive feature. Read what Frank McNay says on page 174 of our March 1st issue.]

COLD-MADE GRANULATED SUGAR SYRUP.

HOW TO MAKE A DESIRABLE TABLE SYRUP; AN IMPORTANT QUERY ABOUT RAMBLER.

In reply to the Stray Straw on page 159 of GLEANINGS, that those who have had experience with cold-made granulated sugar syrup should report results, I will say we use it on the table all the time. When properly flavored we find it superior to any thing we can buy. If not flavored it is tasteless—simply sweet, and we soon get tired of it. About one-fourth common brown sugar mixed with the granulated will flavor to suit some palates, and it gives a little color. We like best to place in the oven of the cook-stove a common tin pie-pan full of granulated sugar; leave it until the sugar is melted, and the resulting cake is a dark brown. Don't stir it. This cake is broken into pieces when cold, and mixed with the sugar as the percolator is filled. The flavor is excellent, resembling maple, and the color is good, thus pleasing both eye and palate.

We use a common glass percolator which holds about a gallon, and cost from 50 cts. to $1.00. Any drugstore should be able to furnish them. One with a faucet in the bottom is convenient; but a cork answers very well. Glass is best, as it does not corrode, and you can see what you are doing. Fasten it to the wall where it will be out of the way, and the syrup-cup can be set under it. A piece of perforated wood or metal cut to fit the bottom, and covered with thin cloth, is as good as or better than a sponge; fill it with sugar and flavoring; add water until it stands over the sugar; keep it so, refilling as it runs out; let it drip in the syrup-cup as needed. From 7 to 8 lbs. of sugar will make a gallon of fine heavy syrup costing from 35 to 40 cts., which, being pure cane sugar, will, after the novelty has worn off, go further than the best you can buy at from 50 to 80 cts., none, or very little of the latter being pure. Besides being pure, it is clean, no dirt being able to pass the filter in the bottom.

About this time Dr. Miller is saying, "What has all this to do with my query about the crystallization or non-crystallization of cold-made granulated syrup?" Nothing, my dear doctor; nothing at all. So far this is how to make the best table syrup you ever tasted, almost without trouble, and very economically. Will it crystallize? No, it won't if you let it drip into your syrup-cup as needed, and keep the latter closed when not in use; but it will if you leave it exposed to a warm dry air. Why? Because the cold water just saturates it as it passes through the percolator. It should pass through slowly to do so, and will retain indefinitely all the sugar it holds in solution, if not allowed to evaporate. If allowed to evaporate, the excess of sugar thus left behind will be deposited in crystals on the bottom and sides of the vessel. If fed to bees it should be largely diluted with water, both for the convenience of the bees in handling, and because, if the excess of water should be evaporated in the hive, it would crystallize, unless it is changed into honey by the secretions of the bees, as some claim. Hot water will dissolve much more sugar than cold. When syrup is made in the usual way by boiling, and enough sugar is added, or the syrup cooks down enough, more sugar is dissolved than can be held in solution when it becomes cold; the excess is deposited in crystals, which fill up the vessel holding it, and, with the disagreeable mess of making it, renders the whole business a nuisance as usually made.

Rig up a percolator, doctor; it is not often you can benefit your pocketbook and please your women-folks at the same time.

Say, what's the matter with Rambler, page 90? "He's all right," you say. Not a bit of it; he has something worse than the "scratches;" he's got *two* left feet and nary a right one. I say, you all let Rambler alone; you ought to be ashamed. I've heard of worrying a man until he did not know his head from his heels; but it is evident you have bothered the poor fellow until he is all left legs and no right ones. Don't see how he climbs those mountains in that shape.

Berlin, Mo., March 8. GEO. R. WELLER.

SELF-HIVERS AND THE DRONE AND QUEEN TRAP.

THE USES TO WHICH THE TRAP MAY BE PUT.

I believe some of the self-hivers are used, not to increase the apiary, but merely to detain the queen and bees, and have as little interruption of work in the supers as possible. Now, if this is the principal object and use for a self-hiver, I see no good reason for using a swarmer of any kind, and I am of the opinion that the drone and queen trap can be used to much better advantage than any self-hiving arrangement. R. L. Taylor has used them in accordance with this theory, and recommends them as the best automatic hiver in use.

Those bee-keepers who do not desire swarms or increase in any way should use the trap. If a swarm issues while the trap is on the hive, the queen will surely be found in the trap, and the bees will return and commence work as though nothing unusual had happened. The queen will be all right if left in the trap several days—in fact, she can be left there until the seventh day after the swarm issued, and then re-introduced to the same colony she came from. Just here I will give a point that will enable almost any bee-keeper to prevent more swarms issuing from the same hive in the same season.

Allow the queen to remain in the trap three days after the swarm comes off. Then re-introduce her (any other will do) to the colony. If the queen is introduced as here advised, it will not be necessary to open the hive and destroy the queen-cells, as the queen introduced will attend to that matter as soon as she gets possession of the combs. There will be no more swarms from that hive that season. If the queen is

known to be a very old one, it is not advisable to re-introduce her, as the colony would be likely to throw off a swarm at any time during the summer.

Now, here is another way to manage the trap at swarming time. If the colony that swarms needs a new queen, and it is not convenient to purchase one, let the old queen remain in the trap till the twelfth day, or until there is no probability of more swarms issuing from that hive. In the meantime, all the queen-cells that were in the hive when the swarm issued will have hatched, and perhaps several dead queens will be found in the trap. Now the trap should be removed so the young queen can take a mating-flight. The only objection to this last method is the loss of brood that would occur while the colony is rearing a queen. Should this occur during the last days of the honey-flow, the damage to the colony from loss of brood would be very slight. Some would claim that it is a decided advantage.

If desirable to preserve the queen-cells reared in a colony that has cast a swarm, the combs should remain undisturbed until the seventh day after the swarm issues. I have found, in my long experience in queen-rearing, that it is a dangerous thing to handle queen-cells before the embryo queens are pretty nearly matured. When capped seven days, the cells will stand rough handling and a temperature a good many degrees below that of the hive the cells were taken from, and not be in the least damaged.

When the cells are removed from a colony that has swarmed, one of the largest and finest cells should be selected as the one to remain. Remove all others. As it is difficult to find *all* the cells, the trap should not be taken from the hive till the twelve days have expired, as a second swarm might issue in the meantime. A queen usually hatches on the eighth day after the first swarm issues, and it is on that day that the second swarm will come off.

Wenham, Mass. Henry Alley.

[We shall endeavor to experiment again along the line that Mr. Alley has indicated. In the meantime, see our editorial elsewhere.]

LADIES' CONVERSAZIONE.

LIFE IN FLORIDA.

MRS. HARRISON TELLS SOMETHING ABOUT IT.

Mr. Editor:—I have spent several days of this week out in the country, among the homesteaders, and a little of what I saw may be of interest to your readers. I had been requested to go to a town eight miles distant, on the banks of this ovely bay, to talk bees. As an additional attraction, several musicians went along, and sang and played "Dot Happy Bee-man" and other bee songs familiar to those who attend bee-onventions.

The musicians went there in a sail-boat; but as I desired a closer acquaintance with the pine woods I requested permission to ride with a woman returning to her homestead, in a wagon drawn by a yoke of oxen. I enjoyed this ride exceedingly, looking at the tall pines, the blooming ti-ti, the lupens, sage, and other flowers. My pleasure was marred only by pity for the poor oxen. Their mistress guided them with ropes round their horns. One of them she called Diamond; the other, Joe. Diamond cheerfully obeyed her directions, but was mad if she wanted him to go a road not leading toward their home, and would pull in a different direction until he was whipped into submission. She would talk to them as if they were children: "Joe, why do you act so? why don't you be good like Diamond? he is a good ox." Joe saw a toadstool in the road, which appeared to be a tempting morsel for him; and in getting it he ran his horn under a stump, and she said, "Joe, why don't you behave yourself? you came very near breaking your horn off."

This woman told me that, if I would come out to her homestead next day she would yoke her oxen and take me two miles to another homestead to see a tea-tree higher than my head. I did so, and on the way she pointed to a large magnolia-tree, saying, "There is the best spring that I ever saw, coming out clear and cool under that tree."

When we arrived at the homestead I was pleased with what I saw. Here was a poor family of eleven—father, mother, eight children, and a grandmother nearly ninety years old. They were too poor to buy trees; but by grafting and budding they had thrifty trees of all kinds belonging to temperate and semi-tropical climates. Whenever there is danger of frost killing their fruit they stay up all night and keep fires burning, and have saved their fruit in this way. The father of the family, and two large boys, have a fish-house on the bay, and catch and sell fish and oysters to teams who come for them from the back country, while the mother and smaller children tend the orchard. She knows every tree, bush, or vine, and loves and watches them with a mother's care. Apples, pears, quinces, and every bush or vine, will grow from cuttings in this soil and climate. She pointed to a very large grapevine, saying, "That is a wild vine, and I want some more of them, for the bees like them so well." In answer to my inquiry as to how much honey she had last year, she said, "About half a barrel." Their bees are kept in box hives, and I'll take back all I ever said against them when I see poor families enjoying this luscious sweet when a movable-frame hive is beyond their means.

The tea-trees were very luxuriant, and belong to the same order as the *Camellia Japonica*, which they resemble. These trees were raised from cuttings, and I purchased a small one, which had a mass of fibrous roots, which were tied up in an old cloth. I looked around for something to carry it in, when I spied a large gourd which answered the purpose well. All trees and plants from China and Japan, such as plums and persimmons, cherries, etc., take kindly to the climate, and I wonder if there are no bees that could be introduced from that country. During the Centennial at Philadelphia, among the Japan exhibit I saw a painting of a swarm of bees in the air, and the Japs after them.

AMONG THE PINES.

On this trip I was at five different homes, and there were bees at all of them—only a few colonies, though, kept in box hives, and they were the smallest black bees that I ever saw. I bade good-by to the woman whose hospitality I had enjoyed, and walked through the pines to the postoffice, to take passage in the mail-boat. Before it arrived she came in, saying, "All of our trees, and every thing that we had, is burned up." As she was alone, and worn out with fighting the fire, heat, and smoke, I returned to the homestead with her, and assisted in putting out the fire. I found that a picket fence surrounding the house was remaining; the bees, pigs, Joe and Diamond; and that but few trees in the orchard were injured. The fire came through the pines faster than the fleetest horse, with a terrific roar, and the tops of the burning pines at night resembled electric lights.

Mrs. L. Harrison.

St. Andrew's Bay, Fla., March 22.

JAKE SMITH'S LETTERS.

THAT "BRETH."

Mr. A. I. Gleanings:—Sum poeple is very stingy about tellin what they know. I aint. I like to let uthers lurn what ive lurnt. So I make bold to use the collumbs of your asteamed gernal to instruck the yooth of our land about bees.

Bees is different kinds. Hunny bees, bumbel bees, queen bees, and I wood here stop to explane that there haint no king bees, jist queens, like it is in England. And the bees thinks as much of their queen as the subjecks of queen Victoria think of her. They jist think the world of her. Why, she doant have to feed herself or wash her oan face. The bees do it for her. She jist enjoys life layin eggs and leadin out swarms.

But ile tell you more about queens bineby. As I was a sayin, thay is hunny bees, bumbel bees, queen bees, drone bees, worker bees, quiltin bees, huskin bees, and a bee in the bonnet. That last is a figger of speech, and means a man which has invented a noo kink into a hive, and thinks the world wood stop agoin round if he didnt tell evry buddy about his invenshun. And heal git you up in a corner, or git you by the collar of your coat, and then heal tock and tock and tock.

Wunst I of that kind got aholt of me. He had invented a pain of glass to put in the back of a hive, so he cood see the bees to work. I was gitting the old mare shod at the blacksmith shop, and he tackled me about that pain of glass into the back of a hive. He had a bad breth. I think his stummich was out of repair. After he had toald me all they was to tell, and sum more besides, I begun to back off from him. I seed my mistake then. He got aholt of my coat coller; and thogh I made sum attemp to back off, he held on and follered me up till I struck the wall of the blacksmith shop. Then he had me. It was no use to struggle against fait.

Ime pirty well up in the world, bein sum 6 feet hie, but he was taller yit. Tall and slim. Sumwhat consumpted lookin He jist brung his face close down to mine, and I had to stand and take it. Oh that breth! It was offal. How I wisht the Atlantic otion was betwixt us! Or the Pesiffick! How I did wish I had never tried to back off from him, but had pashiently endoored the faint aroma of his breth that I receaved at the 1st respectful distance! When he got his face cloast up to mine, and the full idea of the strength of that breth dawned upon me, I giv up then and there that I had never experienced sitch a breth before. It resembled a cross between a skunk, a billy goat, and a limburger cheese.

Then I began to feel in my pockets to find a peace of sassyfrast, or sum sitch thing to take the bad taist of that breth out of my mouth. But I haddent a blame thing about my clothes. Then I began to think what a dreadful thing it wood be to die that way. And I coo1 see the wimmen as they marched by the coffin, a lookin at the corpse and aholdin their hangkarcheese to their nose. For by this time I was satyourated, so to speak, with that breth. Not that I cood reely see enny sitch thing, for as yit I was a astandin agin the wall of the blacksmith shop. And I began to think over my past life, and I wisht I had been kinder to my old woman. For altho Betsy Smith had a tung in her head, she means well, and they haint a man in 10 miles has had better vittles than me. And in that tryin our, I diddent feel like layin nothin up agin Betsy.

Jist then a tremenjous shower of sparks from the anvil floo all over us and skairt the old mare so she jumpt nearly out of her skin. I took my chants, and embraced my opperchunity to brake loose and grab the creeter, and never stopt till I was on her back and on my way home.

That night I brung in more than the yousual allowance of wood for the old woman, and piled it more careful. JAKE SMITH.

OH, THAT BRETH!

P. S.—Much ablidged for the paper you sent me. Yuve got the pickter of me to a dot, oanly yuve marked the rong name under me. My name's not Murray Heiss, it's Jake Smith.

THE WHEEL AND ITS PROBABLE FUTURE.

J. A. GREEN TELLS US SOMETHING ABOUT ITS VALUE TO THE BEE-KEEPER.

Friend Root:—I have been greatly interested in your experience with your late hobby, the wheel. I am one of the crankiest cranks on wheels myself, and it does me good to see such missionary work in that line. I am as firm a

believer as you in the practical usefulness and possibilities of the bicycle, and I think that the use at present made of it is only a beginning, and that the next few years will see a development of it that in itself and in its results will be of the highest importance to the world. A Harvard professor, in a recent speech, declared that the invention of the bicycle deserved to rank next in social importance to that of the railroad and the telegraph; and I think that all who will carefully consider the possibilities of the bicycle, what it has already begun to do, and the effect that these things will have on society as at present constituted, must agree with him. The way to help the wheel to take its proper position in the world's regard is by just such practical uses and recommendations as you and some of your correspondents have been giving it. Mr. Walter Harmer may meet with some ridicule and a great deal of "chaff" in using the wheel for delivering honey, but he is on the right track. By the way, I once carried a crate of comb honey five miles on a wheel. That was in the days of solid tires, too, but not a comb was injured. I believe I was the first to call attention to the value of the wheel to bee-keepers in visiting out-apiaries. During the past season I have found it very valuable for that purpose, enabling me to get along with two horses instead of three, which I would otherwise have needed, besides saving a great deal of time by its greater speed and convenience.

Riding the bicycle is one of the most enjoyable of sports; but that is not all. It is one of the most healthful forms of exercise; but that is not all. It is one of the fastest, cheapest, and most convenient methods of travel; but that is not all. Too many people still persist in regarding the wheel as an expensive plaything, a toy which only the rich can afford, and which will be thrown aside as soon as what they are pleased to call the present "craze" is over. What we need is to pound it into the heads of these people that the wheel is one of the most practically useful inventions ever produced.

In England the wheel is said to be used literally by "the butcher, the baker, the candlestick maker," and for the most practical purposes. It must be confessed that England is ahead of us in most matters relating to the wheel. They have there one cyclist to every 93 inhabitants. Here we have only one to every 209. If the tremendous rate of increase shown last year is continued long, with the good roads that the influence of the wheel is already beginning to give us we shall soon be up to them in this respect.

It is said that there is already more rubber used in making bicycle-tires than for any other one purpose—more than for rubber boots, overshoes, and clothing. Perhaps the reason for this is, that the rubber used in their manufacture must be really rubber instead of a conglomeration of adulterations.

At present the racer and the fast road-rider are at the front in cycling matters. The manufacturers cater to them, and the development of the practical uses of the wheel receives but little attention. This is to be deplored, because, while these men are doing some good by calling attention to some of the possibilities of the wheel, there are many who hold aloof from cycling just because of their follies. The "monkey on a stick" position assumed by those who think it necessary to ride a mile in the least possible number of seconds, will undoubtedly often have grave physical evils as its consequence. Very likely, also, many will be injured by the overstrain of competition in races and long exhausting rides; but used with a proper degree of moderation and common sense, I believe there is no more healthful form of exercise. I think, too, there is nothing of which one is less likely to tire. I began to ride the wheel eleven years ago, and with some intervals have been a rider ever since. I enjoy riding to-day more than in the beginning, and I am stronger, healthier, and heavier than ever before. In fact, I am *dreadfully* healthy, with an appetite for which three meals a day is hardly enough.

Many people imagine a wheel can be used during the summer months only. I have been using my wheel all winter, and have heard myself referred to as the fellow who uses his bicycle as much in the winter as in the summer. During the very stormy and cold month of January I used my wheel every day except five, riding from two to ten miles every day. It was pleasanter than walking or driving, and I saved time by it. Most of this was on city streets and pavements, though one day I rode ten miles over country roads in one of the worst snowstorms of the season. On well-packed snow, a pneumatic wheel runs almost as easily as on a good gravel road; and the expert rider finds ice, even of the slipperiest kind, most enjoyable riding. Nothing but extremely rough roads or soft, deep mud or sand, can stop a good rider on a modern wheel.

Say a good word for the wheel whenever you can. Gleanings is "devoted to home interests," and there are few things that in themselves and in their results are more likely to advance home interests than an increased use of the wheel. J. A. Green.

Ottawa, LaSalle Co., Ill., Feb. 22, 1893.

RECOLLECTIONS AND EXPERIENCES; BY AN OLD BEE-JOURNAL EDITOR.

EXTRACTING, QUEEN-REARING, ETC.

At the time we parted, our colonies were ready to extract. Before we start, a few preparations are necessary. The need of a good honey-extractor is self-evident. Formerly we stored new honey in heavy oak barrels; but the leakage under any and all circumstances made this unprofitable. Now we own several forty-gallon heavy tin cans, the kind used to carry milk to cheese-factories. Small enough to go inside, we cut a board; to this we nail thin ceiling, to rest on the edge of the can and secure a tight cover. A 1½-inch hole is bored through this cover. A smaller hole is made in the bottom of a fourteen or sixteen quart pan, and a tube about two inches long is soldered on. A piece of tinned wire cloth is cut to a circle, and tin-bound. This rests upon a few strips in the bottom of the pan. Several ordinary cheese-cloth strainers are provided, one of which rests on the wire cloth to receive and strain the honey. This pan is now ready to stand upon the can-cover.

A smaller tin can had a shallow pan, with wire-cloth bottom, resting upon its open top. A wooden bar is provided across the pan, upon which to rest the frames for uncapping. After cutting off the cappings they drop into this pan. A pail or dish of water is indispensable now. You consider us eccentric; but we think that, for dislodging bees from the combs, nothing equals a wing made from two or three genuine turkey-quills — the primaries from the wings. These are laid over each other in proper form; a piece of tape is wound closely around, and several stitches taken to hold all firmly. We were amused to note that one of the California bee-keepers recommended these, and he refers to the great advantage gained by wetting them frequently. We add, that, to draw this

wing quite often through water, adds wonderfully to its effectiveness. No other quills that we ever tried begin to equal these primary feathers from turkey wings.

Many a hot day have we sweltered beneath a vest. This seemed necessary, for we must have a pocket and something to confine the veil. Finally necessity was the mother of invention. Some denim was made into a bib; a narrow deep pocket was formed to carry our dull knife used to pry frames; a button at the back of the neck, a pair of strings at the waist, and a string down the back to connect both, completed the rig. This is a cool and handy device in a hot day.

Now for the hives. The enamel sheet is turned back to expose four frames. One by one these are removed, and the bees dislodged, and those remaining brushed in front of the hive. These combs are turned over to an assistant, and four more are uncovered and taken out. By this time the others are ready to put back, unless much uncapping is necessary. We now put these back and remove the two still remaining. This brings us to the perforated division-board. If the hive is much crowded with bees, we take out one or two frames of brood, and replace with empty combs. This process continues throughout the yard. When six or eight frames of brood accumulate, we place them in an empty hive which is put on the stand of a moderately strong colony. The latter is taken to a new location, and the queen, with a frame of brood and adhering bees, is placed in the hive on the old stand. In five to seven days, remove all queen-cells; roll a laying queen in honey, and drop her in, or insert a cell or two about ready to hatch. If honey is coming abundantly, and the colonies are strong, we extract the honey twice a week. It is best to have some of the honey capped, but never more than a quarter of the surface, for it makes too much work to uncap it; besides, the bees are not profitably employed. If the bees fail to occupy the entire space in each hive, we add brood from the colonies too strong. We constantly aim to get all colonies strong, for on this condition depends the profit.

The queens seldom get past the division-boards. If they do, no harm is done, and they can, at the next extracting, be transferred to the brood-ends. If the hives are not surfeited with honey, a good many queens will produce more bees than can be kept contented in our hives. Discontent is a most unprofitable condition. Better remove brood as already described. Seldom has a swarm issued in our yard. We consider it a great hardship and loss of time to watch or chase swarms. Attention to the yard, properly applied, benefits the bees, saves waste of time in catching and hiving swarms, and wonderfully increases the yield, consequently the profit. The long entrances go some way toward keeping bees cool and contented.

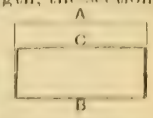
If we understand our location, we shall be particularly late in the season not to take all the honey, nor continue extracting so late as to curtail the winter store.

Sometimes we have, and others may prefer to have, ten empty combs ready to take the place of the ten to be extracted. If these have been recently occupied by bees, or have some brood in them, no objection exists; otherwise the bees may be slow to occupy, and often get discontented, and prepare to swarm.

Toward the close of the honey season, if we are ambitious for increase we draw a colony back a couple of feet, set an empty hive in its place, open the buttons a trifle, and fasten on the bottom-board. Place a wooden division-board in the center. Now open the colony; transfer the brood first, setting frames of equal value alternately on both sides of the center board. Note the side that gets the queen. Continue until each side contains six or seven frames; adjust the followers; put on the enamel sheet and a thick quilt, and you have two colonies. This arrangement makes two clusters, but they are near together, and warm each other very naturally. Proceed by the usual methods to get a queen in the queenless end. When we fertilize queens in these hives we screw a little bracket up the front of each hive, so that the young queens will not go into the wrong entrance. With one or two exceptions, all our colonies are now provided with two queens each. If bees are wintered out of doors in severe climates, we do not advise this procedure.

The following spring we have queens enough for all vacancies, and a few to sell, and can then draw out the division-board and reunite; or, if we prefer, we can set one half into a new hive and proceed as usual.

We have before told you, that, at one time, we grew and sold hundreds of queens, commercially. This business is very confining. As a pastime we still enjoy it immensely. The frames we use are well adapted to this business, and two of them form a substantial, self-sustaining nucleus. When many queens are to be grown they increase the investment, require many bees, and add a good deal of labor to the operation. We have curtailed expenses and greatly accelerated the manipulation as follows: We bend a lot of tin strips, 11½ inches long, like this: / x \ One is tacked to the under side of the top-bar of our regular brood-frame. To a wooden strip 12 inches long, ¼ inch thick, and ⅞ inch wide, we fasten another. This bar is nailed exactly in the center of the frame, horizontally. We next prepare top-bars of proper length, the sectional end view being like this:



A is folded tin; B is the end of the top-bar; C a cavity or space between A and B. The tin strip A is long enough to extend past to B, at both ends, far enough to nearly cover the thickness of the end-bars. These latter are only ⅛ inch thick. Of course, the end-bars are nailed just even with the upper side of B. The bottom-bars are the same length and size as the top-bars. Four of these frames are made to fit moderately close in the large frames already described. The strips X prevent the small frames from dropping out, and the bees soon propolize them enough to make all secure. These combs can be used in full colonies, either for brood-rearing, honey storage, or extracting. Of course, these wooden divisions are not really desirable in large hives. Nucleus hives to hold three or four small frames are built. When ready to raise queens we go to the large colonies and get some of those nucleus frames containing honey. Pieces of ¾-inch hoop iron, about 6⅞ inches long, are slipped into the cavities marked C, and we have projections for suspending our small frames. Two frames of honey and a good lot of bees are put into each of the boxes, and wire-cloth covers provided. These are set in a cool dark place for 48 hours. Sponges filled with water are placed on top of each box. The evening of the second day, get out enough frames of brood, some of it in the early larval state, to supply one or two to each box. In the twilight, take these boxes to their stands and open the entrances. In a few minutes remove the screens and add the brood. Of course, the bees are greatly demoralized, but they have the night to crawl in and get comfortable. Queens or cells can soon be introduced to these boxes. Some of us know very well, that, unless placed in the shade, and provided with unsealed brood,

these bees are liable to swarm and desert their boxes when the queens fly out to mate. We provide against this by arranging about thirty of these small frames in pairs, in a flat hive, into which we put a good swarm and a prime queen. At any time we can get unsealed brood from this, especially if we feed regularly when necessary. If this colony weakens, add capped brood from our regular apiary.

Queens get fertilized sooner in these boxes than in large hives, and the work of examination and finding queens is much less than with boxes containing two or three large frames. If these boxes are kept strong with bees we prefer three frames, for then we know just where to find the queen and her deposit of eggs.

It is best to place these small hives in a moderate shade. If this is not practicable, lay on a second board, large enough to keep off the intense heat.

Years ago we adopted a little convenience that we have not seen mentioned, but which we find indispensable. We bought a soapstone, the kind used for foot-warmers. The wire bail was removed. A thin light box was made, six inches deep, and large enough to receive loosely this stone. Strips are provided to raise the stone ⅛ inch off the bottom. A portion of a barrel-hoop is fastened on securely for a bail. A cover, with cleats underneath, slides under the bail, and a block is nailed on top, forming a handle. A quilt covers the stone. In hot weather this box forms a cool place for cells or queens. In cool weather we warm the stone to the required temperature. In the box we lay a small board bored full of holes of the proper size to hold spiral queen-cages, which, as we use them, are as handy as any we have seen, and which are not subject to a royalty or infringement.

In our next we will describe them and tell you how we make them. J. H. Nellis.

RAMBLE NO. 81.

ON MEXICAN SOIL.

Our only place for crossing the line into old Mexico where there was a custom-house was at Tia Juana—pronounced Te Whah-na. Our journey was not out of the ordinary until we were near the border, where Mr. Hansen came across an old darkey friend of his, and the following conversation ensued.

"Why! hello, Jim! What you doing away down here? Are you in the chicken business yet?"

"Well, I reckon I'se got dat ar coop full. Whar's ye boun' fur, Mr. Hansen? done got lost, eh?"

"Oh! we're looking around to see what's the prospect for bees down here. Do you know of any stray swarms around?"

"Why! yas, dat ar schoolhouse up on de hill dar is chock full on 'em. Dar's two in the cuperlo, one just over the mirandy, and another near dat ar dorcas window."

"That so, Jim? Glad you told me. I'll come down some day and take them out."

"Yah, yah! you will, eh? Why, dem's my bees. I wants dem myself—dems mine, shoer, Mr. Hansen. I's goin' to start in de bee business myself; spect to make a right smart thing out of 'em."

"All right, all right, Jim. Success to you with poultry and bees. Good-by, Jim."

A little further along we found Messenger's Store, where an honest German was having his ups and downs in the border country. The Tia Juana River had washed away several thousand dollars for him, but he was up and at work again. His store was a sort of depot for receiving honey and wax from the Mexicans; and what he received was, a good share of it, taken from wild colonies found in rocks and other cavities, and the trade amounts to several thousand pounds per season. Mr. Muth—a brother, I believe, of our Cincinnati Muth—lives not many miles from this point, and we learned from Mr. Messenger that the product of his apiary during the past year was 185 cases of honey, or 22,200 lbs.; so it seems that the Muths are successful in the matter of sweets wherever they are located.

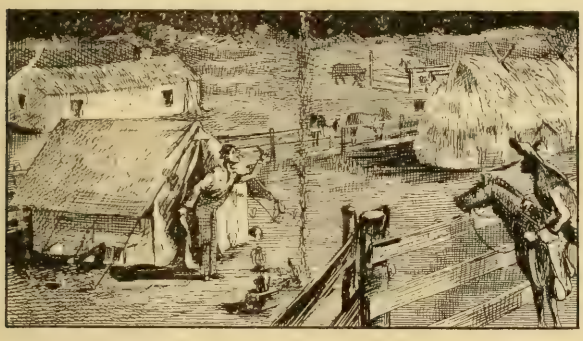
Our visit to this honey and wax depot led us to Tia Juana in a roundabout way, and we entered the town by the back door, or from the Mexican side. Although we have many Mexicans in California, they are very much Americanized in manners and dress. Here we found quite a different appearing crowd, with a more uniformly swarthy complexion; the tall broad-brimmed decorated Mexican hat was a distinguishing feature, and more people were on horseback than in wagons. Tia Juana is a small town, with but few buildings, and the custom-house is the most pretentious of any. There was formerly an American portion to the town; but the river, in one of its periodical overflows, had wiped it out, and the Americans now residing there were in scattered locations. Tia Juana is at the end of railroad travel. The motor from San Diego runs here mostly to take visitors out here who wish to see a Mexican town and walk on Mexican soil. We find plenty of the rising generation, and about an equal number of dogs. It is proverbial, that, the poorer a Mexican family, the greater the number of babies and dogs.

We presented ourselves at the custom-house in our everyday toilet of slouch hats, brown duck overalls and blouses, and without boiled shirt-fronts or starched collars. The officers evidently took our word for it that we were quail-hunters, and gave us the permit desired, and we forthwith jogged happily along into Mexico, and westward toward the San Antonio Canyon. The only signs of life we saw for a long distance was a herd of several hundred goats brousing on the dry herbage, and attended by a solitary mounted vaquero.

The San Antonio we found to be something of a labyrinth of canyons; and, after getting puzzled over the various trails, Mr. Hansen climbed a small mountain to get his bearings. From his elevated position a barley stack was visible, and, making that our objective, we hastened down the canyon and found that to be the ranch we were seeking—Machado's, of San Antonio. Mr. Hansen had been here before, and was somewhat acquainted with the owner, who could talk but very little English. The Mexicans are something of a silent race, and our conversation was not very prolix; and what there was of it, I left for Mr. H. to perform.

The Machados lived in a typical Mexican adobe, with a broad veranda upon one side, upon which the family live as much as, if not more than, they do inside. In the living-room there was an ample fireplace and no stove. The family had just eaten their supper; and, after getting permission to camp near the house, we prepared to make a fire to cook our evening meal, when Mr. Machado gave us permission to use the fireplace, upon which there was already a rousing fire. So friend H., who was chief cook that evening, went in with his little pet steam cooker loaded with potatoes and quail, and placed it over the fire, and soon our food was cooking finely. Before our cooking was finished it was getting dark outside; and instead of lighting lamps, and reading books and newspa-

pers, in a civilized way, the family went to bed. In fact, I don't believe they had a lamp or a newspaper in the house. Bro. H. was in a peck of trouble over his cooking. The big fire melted both handles from his choice cooker, and blackened its fair exterior. In removing it he burned his fingers, spilled water on the fire, and came out to the veranda in a hurry, talking Dutch and English in a subdued tone, and not at all complimentary to Mexicans and fireplaces.



DISTURBED BY MEXICANS.

As he could not see the sardonic smile I then wore, I sort of shouted in a stage whisper, "Well, who's a kicking?" I felt a little sardonic, from the fact that our friend, while on our travels, wanted to camp every time in somebody's front dooryard; and this time he had overdone the thing, and got right in with the family, and Mexicans at that. It did not work well, especially upon that lovely cooker.

After my remark, we silently ate our rations in the dark, and in due time withdrew to our camp out beside the barley stack.

We were just dropping off to sleep (Mr. H. had got in several big snores) when a Mexican rode up on horseback outside the corral, and, from his actions, I knew he wanted to get through. I went out and showed him the gate and the open window, where he could find Mr. Machado. He evidently obtained permission to stay, and, securing his horse to the corral, disappeared in the darkness. At a later hour another Mexican rode up. He was also shown the way, and disappeared like the other one. About midnight the same operation was performed again. About that time the arrival of Mexicans became monotonous, and so devoid of novelty that I joined Mr. H. in the land of dreams. In the morning the corral was nearly encircled with horses; and before sunrise the Mexicans, singly and silently, departed without even an "adios."

There was but little evidence of cultivated fields around the residence, and their main means of subsistence is in the rearing of cattle. Near the house was an immense grapevine, fully 12 inches in diameter near the ground, and covering an immense trellis, and laden with the delicious Mission grape. Having permission to partake, we enjoyed the privilege.

This canyon has many wild bees in it; but there are no apiaries. The honey flora exceeded in abundance and variety any one field I have ever seen. While on our trip to Campo we found an abundance of white sage, and but a small amount of black sage; but in this canyon both varieties were in abundance, with a great variety of other honey-plants.

The Mexicans do not get hold of bee-keeping, and American enterprise is kept out by a duty of 20 cts. per gallon on all honey imported into the United States. About the only way to raise honey here profitably is to raise it by the cargo and ship it to foreign ports. In years past Mr. Harbison has had his mind upon these fields; and the plan he proposed was to form a company for working them.

Directing our exploring expedition to the south, we arrive at the Ames ranch. Mr. Ames is an American, and is joined in blissful wedlock to a Spanish wife. Mr. Ames was absent, but we were warmly greeted by the vociferous barking of six dogs. This brought an equal number of children to the door, with the mother in the rear, and an old barefooted wrinkled Mexican near the house. We inquired the way to the sea by saying, "Donde está el mar?" She rattled off Spanish at the rate of a yard a second, and gesticulated with both hands and her head vigorously, and we departed, just as though we understood every word, when we didn't understand one.

RAMBLER WASHES HIS FACE IN THE PACIFIC.

Cattle, horses, and grain was the chief industry here, and the rolling hills were entirely destitute of honey flora. Soon the broad expanse of the Pacific was before us; but we had gained the shore in a very tame place, and, after

picking up some rare and beautiful shells, we continued our journey, no houses in sight, no human beings; a herd of cattle and a band of horses were enjoying the surf along the beach. That was all the life manifest. Before we had lost sight of the horses, however, a band of vaqueros came around a point, and came toward us upon a swinging gallop. Our permit, however, gave us an easy feeling, and we were gratified to see them make for the herd of horses instead of us. The roads we traveled this day were hilly and stony, and led through long winding and guttered canyons, apparently little worked and little used. At night we camped near the seashore, and dame Nature kept us company by dashing the spray of the rolling breakers at our feet; and their incessant thundering lulled us to sleep. Ah! wasn't that a grand place to camp? no Mexicans to bother us, and just over the line on Uncle Sam's domain.

Near our camp was posted a very peculiar notice—peculiar in being posted where the ocean spray could often strike it. It read as follows: "Hunting wood and honey is strictly forbidden." It is supposable and probable that wood is often thrown up here on the shore; but it seems a queer place to hunt honey in nothing but sandbanks, but, nevertheless, it is a fact that hundreds of wild swarms find a home in places along the shore, and owners of the land take this method of warning trespassers away. It would be interesting to know how many swarms annually get beyond land in their westward flight, and are swallowed up in the waves of the ocean. Even at that time of the year (October) many swarms were migrating; and before camping we found a large swarm on a bush by the roadside, presumably a starvation swarm.

The coast near our camp had a fine gravelly beach, but it was evidently a dangerous place for bathing, from the terrific undertow. As our canteen of fresh water had become somewhat reduced, I thought it would be just fine to take my morning wash in the Pacific Ocean. With washdish in hand I proceeded to dip up some water; but I found that a breaker spread out so quickly and so thin that there's nothing to dip. Not to be cheated out of my wash, I followed the breaker down almost 12 ft., when it receded; and, with the edge of my washdish, I dug a hole in the sand and ran up the beach ahead of the next foaming breaker. In a minute, back it went, leaving a fine pool of water in my excavation. Finding the water full of sand I allowed it to settle, and forgot for an instant the next returning breaker; and, before I could get out of its way, it politely helped me to land, and actually roared a sort of hoarse laugh as it swirled into the deep again. I looked up from my wet condition, expecting Bro. Hansen to shout, "Well, who's a kicking?" but his mind was intent on cooking, and he had not seen my encounter with the Pacific. Though somewhat wet, I tried the trick again, and obtained the water and washed delightfully. The sketch will give a fair idea of the situation, also showing the warning to trespassers.

We broke camp in the cool of the morning, and the dinner hour found us back at National City, in Mr. Hansen's free and easy bachelor's quarters. Our trip had consumed ten days; and, though we had been living a sort of gipsy life, we returned with health in every pore of our bodies. Our intercourse with our bee-keeping friends had been pleasant, and we felt as though we had done some good missionary work for the Bee-keepers' Union. Not feeling much the necessity of rest, we went over to San Diego that afternoon, and in an interview with Mr. Harbison will next be found Mr. Hansen and the

RAMBLER.

HUMBUGS AND SWINDLES.

SELLING RECIPES FOR DOING THINGS.

Some time ago one of our correspondents sent us a lot of circulars. The largest circular told about wonderful recipes worth immense sums of money, to be sold at enormous (?) discount (!)—among them the great butter recipe, worth $10.00. Most of you have doubtless heard of it. The whole of the milk, just as it comes from the cow, is, by a trick of chemistry, to be converted into solid gilt-edged butter. The circular says: "Any one can make butter at a cost of ½ cent a pound, which I guarantee to be fully as good as pure cream butter, and much healthier. Price postpaid, $10.00." Then there is a way to keep fruit, without sealing it. It says: "I pay $1.00 a gallon for all fruit that does not keep when put up according to recipe;" to make cider without apples; to cure rheumatism, toothache, neuralgia; to make buttermilk yeast; to preserve meats, milk, fish, etc., without salt; to purify lard; a recipe to make hens lay "continuously the year round;" to keep vegetables; to make soap without lye or grease; washing-fluid; jellies without fruit, "twice as healthy, four times as pretty, and can be made in 40 different flavors." And last, but not least of interest to the readers of GLEANINGS, how to make artificial honey—some that nobody can tell from bees' honey, and some that costs only 6 cents a pound. In explaining the matter, the vender kindly informs us that it is an awful bother to get honey by keeping bees; they sting folks, and you have to work out in the hot sun; you must watch them every day, and a good many times they get lazy and do not make honey even then. These valuable recipes all together would, if bought singly, cost 30 or 40 dollars; but if you buy the lot you can have the whole grist for only $10.00. Along with this liberal proposal comes a little slip on which a poor woman tells us that, if we will send to her for the recipes, *she* will send the "hull lot" for only *25 cts.;* and there is a postscript at the bottom where she says she will throw in a song-book besides, which is alone worth a great deal more than the 25 cts. Another postscript says she is a poor woman working hard to support her family; and if you send her 25 cts., it will be helping the widow and the fatherless. Did anybody ever before hear of such a pile of property (?) lumped off at such a fearful sacrifice? And, after all is said and done, you get a song-book too, and help the widow and fatherless "to boot." Why, it is more than human nature can stand; and so I just threw things around until I got 25 cts. put into an envelope and started off. Days passed while I was waiting in breathless suspense; yes, and some more days passed; and after I had given up all hope, and almost forgot my disappointment in doing something else (riding my wheel, for instance), a little bit of letter, written on a scrap of paper printed on the other side, came to hand, saying that this worthy woman had been off on a trip to Florida, and, of course, *she* could not fill my order till she got back. The envelope contained the recipes; but that wonderful song-book was to come after a while from Boston. Our friend who sells the recipes, and solicits help for her family, lives in Kewanee, Mississippi. Now, would you like to know about these printed recipes worth 30 or 40 dollars? We can not afford to take space to give all in GLEANINGS, but we will give you just two, *verbatim et literatim*—the butter recipe and the honey recipe. Here they are:

GREAT BUTTER RECIPE.

2 ounces of Gum Arabic; 1 ounce of Alum; 25 grains of Pepsin. Powder up fine and mix well.

DIRECTIONS: Put into a tin bucket one cup each of butter and new milk, a little salt and as much of the above as will lie on a silver 5-cent piece. Now set the bucket in some warm (not hot) water, and begin to stir with a spoon, and as soon as the butter melts take the bucket out of the water and go into the cool air with it and continue to stir it, until it gets cold, and it will be butter. You may fail a few times, but keep a trying til you learn just how to work it.—Price $10.00.

ARTIFICIAL HONEY.

Good common sugar, five pounds; water, two pounds; bring gradually to a boil, skimming when cool; add one pound bees' honey and four drops essence of peppermint. If you desire a better article, use white sugar and half pound less water, half pound more honey. $1.00.

To tell the truth, I have not even tried the great butter recipe at all. The last sentence is what discouraged me. It suggests that you may fail a few times; but you are to keep on trying "til" you learn just how. I am a little afraid I should never make it work, and then the disappointment would be more than I could bear. Come to think of it, I didn't try the artificial honey either. The thing that discouraged me about that was the clause, "If you desire a better article," etc.

P. S.—Oh dear me! after I had got all the above said and done, I found at the bottom of one of the papers this:

"This Recipe *MUST NOT* be given away, nor published in papers."

Just think of it! "Must not," is put in italics, and in capitals besides; and then she (that is, if it is really a woman who writes) says it must not be *published*. What is it we used to hear in our childhood about coming out of the little end of the horn? Well, don't you really think, friends, that this recipe business—the whole of it—from black pepsin to artificial honey, is, in this year 1893, coming out of the little end of the horn? Almost every thing that has ever been published and sold is lumped off for 25 cts., and a song-book thrown in. We have not received the song-book yet, but it may be a real good thing—who knows? May be I can sell it to Dr. Miller for 25 cts., and then I shall have all the recipes *for nothing*.

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

SOME "FAX."

Mister Root:—I hev kept bees fer upwards of 15 yeers, an' hev sort o' stumbled onter sum fax wich I larnd heer in the Hoosier state. Thinkin' thay mite be of some good to yore reeders I send 'em to you immegiately.

The fust one is why bees swarm. Hit am allus bin puzzlin' to me just why bees ever got to swarmin', an' at last I am able to give the only kerrect explanashun. Git yer bible an' turn to Genesis 8, 17 verse wich sez, sez it: "Bring forth with thee every living thing that is with thee, of all flesh, both of fowl, and of cattle, and of every creeping thing that creepeth upon the earth; that they may BREED ABUNDANTLY in the earth, and be FRUITFUL, and MULTIPLY upon the earth." I emphersized some of them words so you might git the ideer. I am satersfied, Mister Root, that bees will swarm when you an' me are gone frum this airth a mity long spell. Hit aint no use to try to upset Nature's plan.

Nuther fax is, bees will raze drones in spite of all kreashun. You can't keep 'em from hit, cause thaive got to hev 'em, bound to hev 'em, an' can't keep house without 'em. Sum folks claim foundation is a panacea; but I hev seen 'em knock the waddin' out'n of whole sheets of it when thay wanted a congregashun of drones.

Nuthern is, thick-top frames, ⅞ inch will keep away burrs, but a few braces will git thar jist the same.

Here's big fax: All spaces in the hive must be bee spaces; an' all angles in yer appliances must be right angles. Menny mistakes is made heer. Take yer V edge on Hoffman frames. Hit aint right angles, ner bee-space, so the bees 'll jist gaum an' smeer hit full of properlice.

Las' fax, Mistir Root, I hev obsarved that all jints must be perfectly plum, square, and tite fittin'. The only improvement you shood make on yer frames is ter make 'em so nice and true when thay kum together that thay aint no space nowhares; make the end-bars so thay will fit even 'thout enny joggin; hev the ends of the top-bars cut as slick as yer sekshun boxes, 'an the rabits the same way; an' don't make 'em with much play so thay would jog at one er tother end of the hive, an' git properliced. I like the ones you sold yeer before last best, cause the top bars was thick and groved so I could fasten foundation into the groove better.

Thay is sum more fax I will send you sum day if yore reeders gives this enny appreciashun.

Alexandria, Ind. E. E. EDWARDS.

["Fax" are what we want, and must have. A few more of 'em, even if they do demolish our pet schemes, will be acceptable.]

A WORD TO INDIANA BEE-KEEPERS.

Indiana bee-keepers who are to make an exhibit at the World's Fair *must* make application soon, or space can not be reserved for them. Thus far only a few have responded. Bees have wintered fairly well, and the honey season promises to be good. It is to our interest to have a good showing; and all expense of collecting, transporting, and arranging of exhibits will be paid from the State appropriation. Make application to Hon. B. F. Havens, Executive Commissioner, Indianapolis, Ind. In making application, state what you have to exhibit. Beeswax, comb, and extracted honey are wanted for the show-cases, while bee-appliances will come under another classification, but will be displayed near the honey exhibit. *Do not delay.*

WALTER S. POUDER.

Indianapolis, Ind., March 11.

HEAVY WINTER LOSSES IN BOX HIVES; DOVETAILED CHAFF HIVE ALL RIGHT.

Many bee-keepers in this vicinity, especially box-hive men, have lost very heavily this winter, and I anticipate a much heavier loss before warm weather comes. One box-hive man, who had 10 or 12 colonies last fall, has to-day but two living, and both of them would not make one good one. Another bee-keeper started with 25 or 30 colonies, and has now about a dozen. Several farmers who keep from five to a dozen hives have shared the same fate. "My bees died with plenty of honey in the hive" is what they say when asked how their bees are wintering. Their owners lay the blame to the deep snow smothering their bees. They use hives large enough to accommodate two or three colonies, and leave on the surplus-boxes from last summer, which makes their hives so open and barn-like that the air passes through the hive like a chimney or flue; and, of course, when the mercury went to 15° and 20° below zero, as it did here for a week or more, they soon ate the honey out from where they were clustered; and, being so stiff from cold, and not able to move out for more, they starved, with honey in the hive.

I started into winter with five colonies, two

in Root's Dovetailed chaff hives, and three in single-walled hives covered with chaff cushions and division-boards; and all are in good condition thus far.

Your Dovetailed chaff hive combination is almost perfection, as far as my limited experience goes, except the flat cover, which warps under the influence of the sun so as to require heavy weights to keep them down.

The Hoffman frame worked well last summer with me. They had no brace-combs and but very little propolis on them.

England, Pa., Mar. 14. J. N. Patterson.

A GOOD TESTIMONIAL FOR THE FIVE-BANDED BEES.

I keep half a dozen colonies of bees. I have Italian, three-banded, Holy Land (genuine, with the double-pointed ever available sting and the celebrated hysterical nervous temperament), and the five-banded (like all others, nominally so); and although the five-banded ones are not all true to their name, they are the only ones that gave me any surplus honey last season. I do not raise queens to sell, and am not partial to them, but think they are the best variety that I know of. They are gentle, very prolific, and work in colder (I do not mean cooler) days than any other bees I have ever had or seen, so I speak a kind word in justice to this much-abused race. Upon the whole, I do not consider success in bee-keeping is as much due to the kind kept as how; but I prefer the golden Italians, from my experience, and hope soon to see the day that will have them bred up to the standard—i. e., with five yellow bands.

Saltsburg, Pa., Feb. 22. Golden Italian.

BEES GOING TO MILL; ABSORBENTS AHEAD OF SEALED COVERS.

My bees are located only about six rods from a grist-mill, and last year they took a notion to run the mill to suit themselves. The first warm days they went in for bran, middlings, or any thing that made a substitute for pollen. They made the miller considerable trouble. This year they commenced on a sawdust pile that was left over from putting up ice. To prevent them from going to the mill again, I gave them some bran and middlings, and they commenced immediately on it. They have worked three days on it already, by the thousand. So far they have not molested the mill this year. Does it injure the bees to stimulate them so early? I would not give them any meal yet if it were not for the mill.

My bees have wintered very well so far. They are in first-class condition, but considerably in favor of chaff cushions rather than sealed covers. Amos Miller.

Trail, O.

[Too much of the artificial pollen is rather bad in the combs. As a usual thing, we recommend not giving meal. It is liable to stimulate brood-rearing too early. Soft maples furnish natural pollen soon enough for our locality. Glad to get the "pointer" on absorbents and sealed covers.]

WHAT MAKES THE BEES DIE IN WINTER?

Is it the long confinement, or is it because they can not move from one place to another in the hive, that causes bees to die so? I think about half of every colony is dead, and a part of all. One colony died and left their honey badly stained a kind of dark red. Is it safe to feed it to other bees? Milton Shipley.

Bentonville, Adams Co., Ohio.

[Bees die from both causes. Too long confinement, say for three or four months, is apt to cause dysentery in the one case; and in the other, their inability to move to the stores by reason of a protracted cold spell for ten days or two weeks, causes them to starve.]

HONEY-DEW OF 1891.

The winter of 1891 was a disastrous one for bees in this vicinity. I had 35 stands, and lost all but 5. It was caused by honey-dew. It was so plentiful here that the leaves on the trees glistened, and the honey was as dark as molasses. Mr. Dadant said bees would winter on it, but he was mistaken. I sent some of it to Prof. Cook, as I saw in a paper that he wished to see some of it. I told him to send the result of his investigation, and have it published in Gleanings, and send me the number containing it. I have not received it yet. Henry J. Alvis.

Montrose, Lee Co., Iowa, March 5.

NO STOCK IN SEALED COVERS.

I do not take much stock in sealed covers, as I have seen bees winter in the old boxes *full* of *holes* on top and *no* protection. In fact, the best hives in spring have usually been such ones.

I wish to say about Gleanings, we appreciate your efforts, and it is eagerly looked for. No wonder your *old* subscribers stay with you.

I hope for a good season, as white clover is in good condition. Byron E. Smith.

Newman, Ill., March 6, 1893.

WELL FIXED AND THANKFUL.

I should like to have you see my place, as I think I have the best location for gardening that I ever saw. I am within three blocks of the public square of Seward, county-seat of Seward County, a town of over 2000 inhabitants. I am on the south side of town, and have 7½ acres of land, with a mill-pond on one side to irrigate from. My land is naturally very rich, but I get all the manure I want for hauling it away. I also have 36 colonies of bees in chaff hives, and engine and saws to make bee-hives for myself and to sell. S. H. Beaver.

Seward, Neb., March 11.

FOWLS NOT BEE-EATERS BUT DRONE-EATERS.

Dr. Miller asked for information in regard to fowls eating bees. I keep a good many varieties, and they have run in my bee-yard for the last 20 years. I have never seen one eat a bee. They will sometimes stand by the hive and catch drones when the bees are driving them out. Bees will always attack a dark-colored chick rather than a white one. I have often seen a chick snap and throw a bee from its feathers; but, instead of eating it, it would hurry away, with many shakes of the head and much fear, although probably not stung. M. Hurd.

Marshall, Mich.

Bees are wintering poorly, especially those out of doors. Some have lost all, and others nearly all, with plenty of time left to lose the rest. D. M. Torrey.

Schiocton, Wis., March 8.

BEES IN GOOD CONDITION.

I went into winter with 60 colonies, all living at date, with burlap and five inches of chaff over bees for winter protection. Bees had a good flight here Feb. 26 and 27; all colonies are in good condition. W. B. West.

Keystone, Ind., Feb. 28.

BEST METHODS OF QUEEN-REARING.

Will you be kind enough in your next issue to explain your method of queen-rearing; appliances; number of nuclei, etc., necessary for the rearing of a given number of queens? We

know how to raise a queen, but many of us do not know the most economical manner of requeening where it requires 100 or 200 queens or more. In this climate, queens lay the year round, and *wear out fast;* but, aside from this, bee-keepers who restrain swarming see that it is a subject of the first importance, and should receive more attention from the bee journals and writers. It is not to be expected that queen-rearers will voluntarily tell us their methods; but *you*, Mr. Root, as a journalist, will see that we are supplied with the desired information.

Santa Ana, Cal., Mar. 11. L. S. EMERSON.

[There are so many different methods of queen-rearing (and each one thinks his own way is best) that it is a difficult matter to decide between them. There are points of merit in all of them. Much depends on whether you propose to rear queens to sell as a business, or to requeen your apiary the most economically and at the best time of the year. From your letter, we judge you prefer to do the latter. There is no time when the apiary can be requeened more cheaply than during swarming time, when there will be hundreds of large choice cells from select queens, from which to choose. If we were to requeen, we would not make any particular effort to hunt up such cells; but while we were performing other necessary manipulations we would be on the lookout for such, say about nine days old. These could be placed in nuclei, and allowed to hatch and become mated; or, as many think, it pays to have the old queens removed, or practically so, during swarming time. The old queens, or over two years old, can be killed, and these nice swarming-cells can be placed in the hive. By the time the swarming fever is over, there will be a nice young queen, in all probability, reigning supreme, and swarming will have been controlled in the meantime. By that time, too, the honey season will probably be over, and you will not have excessive brood-rearing at the wrong time of the year; but you will have instead brood-rearing just when you want it—early in September—giving the colony plenty of young bees to go into winter quarters. And, again, during swarming time bees are less apt to tear down cells given them or kill the young queens. The nicest time in all the year to requeen, or, in fact, to raise queens for any purpose, is during swarming time. If you desire to rear queens to sell as a business, we would recommend you to the Doolittle, Alley, or even to the plan given in A B C of Bee Culture.]

CORRECTION IN RAMBLER'S CONVENTION REPORT.

After reading the report of the Bee-keepers' State Convention, at Los Angeles, Cal., as made by the Rambler, on page 169, the spirit moves me to make some corrections. The idea of his trying to make out that he "kicked" when requested to correspond with the lady managers of the World's Fair exhibits for Southern California! Why, every one could see that he was "filled with rejoicement" as the Irish girl said, at the mere mention of it; and the only *confusion* visible was that upon the face of the Rambler. I have since learned that there are some very bright widows among the aforesaid managers; and as he confesses that Cupid still haunts him, who can tell what the result may be? MRS. J. F. MCINTYRE.

Fillmore, Cal., March 15.

GOOD CELLAR WINTERING.

On removing my bees from cellar yesterday, of 36 swarms, full count, I report *not a swarm lost.* I do not propose to lose any, as they are taking food nicely at entrances. They are all in Dovetailed hives, sealed covers. I moved a hive backward, off the bottom-board, about one inch, giving ventilation at front and rear; put into the cellar Nov. 10, taken out Mar. 17. The temperature was from 34 to 45°, usually standing at 40. HARMON SMITH.

Ionia, Mich., March 18.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

HOW TO MAKE A VALUABLE FERTILIZER WITH ONLY THE LABOR OF DRAWING IT.

Friend Root:—I want to tell you how we get a lot of fertilizer for just drawing it a mile and a half. As the snow goes off in the spring there is a heavy coating of mostly horse manure on all the paved streets in our village; this is hoed into piles in expectation of our team, which we start drawing the stuff on to the garden. Then comes the annual street-cleaning, done by the village authorities. They hoe it up and we draw it off. This gives us 60 or 70 loads; then the streets are all swept every Friday all summer. This gives us about 6 or 8 loads every week, which we draw off promptly, and I think it is worth nearly as much as stable manure which we have to pay one dollar a load for, and draw it too. As it is composed mostly of horse manure it will heat rapidly if composted.

Of course, we have to hire extra teams to keep this all going promptly, and sometimes it seems as if we could not attend to it; but where there is a will we can always find a way. Our streets and parks are lined with maples. At leaf-shedding time in the fall we devote a week to gathering these and drawing these maple leaves, which we pack under a large shed. These are used to give all our stock a bed a foot thick all winter. It makes me feel happy when I can go into the stable during a cold night, with the mercury below zero outside, and see our three cows and horses nearly covered with leaves. I know they are as comfortable as they can be; and what a big pile of manure we have in the spring! I think there is no bedding better than leaves. They rot readily, are short, and are a natural fertilizer, and we use them liberally. They cost us nothing but raking up and drawing.

Oneida, N. Y. EDWARD B. BEEBEE.

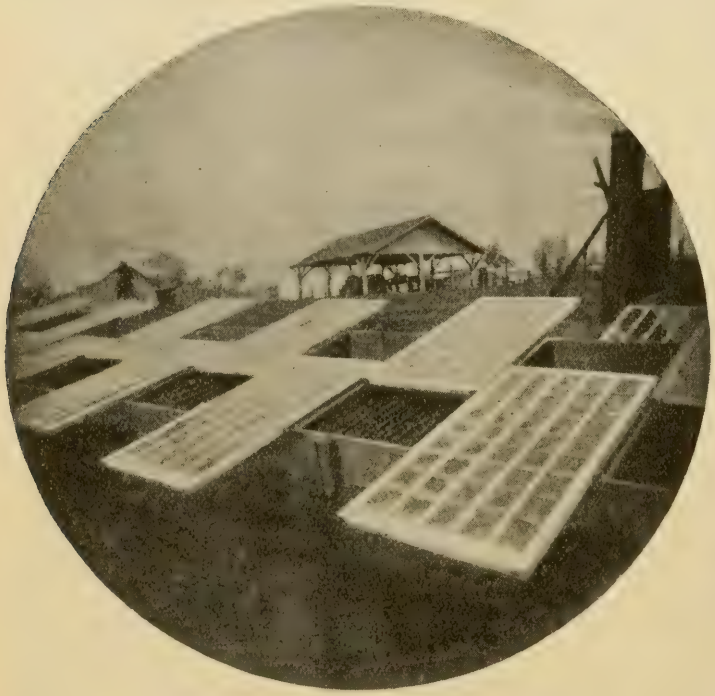
[Your suggestions are tiptop, friend B.; and although ours is a town of only 2000 inhabitants, I have often thought of this very thing, and I feel sure it will pay. Since I have seen what a bushel of horse manure, gathered according to our friend Eugene Davis, just as the horses drop it, will do,* I have felt sure that it would pay to have somebody go over the streets and shovel this up. The authorities would certainly make no objection, and I really believe a man would make good wages in a town of any considerable size. People might laugh at him for a while, it is true; but the laugh would soon be on the other side. Your ideas in regard to gathering leaves are also excellent. A good many times the wind sweeps them up into a corner where a good big load can be gathered very quickly. Somebody may suggest that it is small business. In one of Vaughn's catalogues I notice he advertises leaf-mold for florists, at $2.00 a barrel. Now, these leaves, as you say, make the best bedding in the world, and I actually believe they are worth $2.00 a

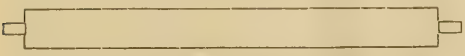
* Better put your money into this than in nitrate of soda or *any other* chemical manure. I shall be glad to own up when somebody can show me I am mistaken.

barrel when rotted down and mixed with the manure. Leaves and horse manure, forked over and composted with a third of their bulk of clean sand, containing no weed seeds, will make about as nice a material for growing plants and seeds as can be scraped up. In fact, I should like to see any mixture of chemical fertilizers go ahead of it. For some purposes, some composted sods would probably be a beneficial addition.]

HOT-BED AND COLD - FRAME SASHES; HOW SHALL WE ARRANGE THEM SO AS TO PERMIT THEIR EASY REMOVAL AND REPLACING? SOME GENERAL REMARKS IN REGARD TO HANDLING GLASS.

Mr. Root: — In your visit to H. R. Boardman's, described on page 145, I am reminded of one important item we left out in building our hot-bed frames, shown in the tomato book; that is, the cross bars to slide the sash up and down on. Just give your friend Boardman a hint of it, and he won't have to lift the sash at all. They will slide with very little strength.





Short strip, 1x3x70 inches; long strip, 1x1½x74 inches.

This cross-bar should be made of 1 x 3-inch lath, to fit tight crosswise of the frame; then one lath 1 x 1½, set up edgewise on the slat above named, and nailed firmly. The ends of 1½ x 1 should project over 2 inches at each end.

Crystal Springs, Miss., Feb. 23. J. W. Day.

[In order to consider the matter mentioned by friend Day, I submit one of my Kodak views from the tomato book, taken while I was in Crystal Springs, Miss.

You will notice the strips of wood, or rafters, reaching from one side of the bed to the other, described by friend Day, on which the sashes slide. We have one such bed in use on our grounds. There are several reasons why I do not like it. First, the sashes, when slid either down or up, are in the way. But this is principally because we have only 16-inch paths between our beds. The ground where our plant-beds stand cost something like $2000 per acre, therefore every inch of it must be made to do service. Second, when sashes are thus pulled down or pushed up, they are in a very dangerous position, with the heavy March winds we often have here. I very much prefer to have the sashes piled up at the end of each bed, as illustrated on page 104 of the tomato book. Third, those rafters, or strips for the sashes to slide on, are greatly in the way. As soon as we have got off a crop we are in the habit of turning the dirt over thoroughly with a spading-fork; and every little while we put some fresh manure under the existing soil. In all this kind of work the bars will be a hindrance. When our sashes are off, we prefer to have a clear bed for the whole 50 feet of its length. Of course, circumstances alter cases. On friend Day's tomato - farm land is cheap, and he can afford plenty of room to slide his sash down or up as well as not; and I hope they do not have such fearful blows in the spring of the year as we do here. If I wake up in the middle of the night, and hear the wind blowing "great guns," I am very apt to get uneasy unless I know my sash are all in such compact shape that they will stand almost any thing short of a tornado. Where a bed is completely covered with sashes, the wind seldom picks them up; but where a part of them are off and a part on, or where they are slid back, or even tilted, the wind is apt to get hold of them. Our present method of handling is to let them remain in their places until the air gets so hot that the steam comes out when a sash is lifted. If the weather is frosty, and it is freezing in the shade, we give ventilation by lifting every third sash by one corner and swinging it so one corner rests on its neighbor. If, however, the sun shines out clear, and the weather is warm, so it *thaws* in the shade, then we usually lift the sash off entirely.

Of course, much depends on whether you are protecting onions and cabbages, or tomatoes and cucumbers. Whenever there is a warm rain we want all the sashes off, and we prefer to leave them off all night if there is no danger of frost. The Weather Bureau is just now proving a great help to us. It often gives us notice 48 hours ahead of what we may expect, and thus enables us to save useless labor in handling sash, very materially. Many thanks to Uncle Samuel.

The open building in the distance is one of friend Day's packing-sheds. In these sheds he

also mixes his fertilizer; and in here his hands are also congregated when a shower comes up; and I believe he usually has some sort of work for them to do at such times. The building on the left is a house for the overseer of this special part of his farm; and it is the overseer's business to look after the plants, glass, etc.

CHEMICAL FERTILIZERS.

You may think that I am harping on this matter a good deal; but it troubles me exceedingly. We have just ordered 900 lbs. of nitrate of soda to be sent to one of our customers because he wished us to get it for him. He tried some last year, and felt sure that it was an advantage to his onions. I have been carefully scanning the agricultural papers, to see whether I can not find out why nitrate of soda produces no result on our soil. Several prominent teachers say quite emphatically that it produces the best results on ground that is already highly manured. If this is true, then an application on our rich plant-beds surely ought to show. But it does not show a bit. It does harm if you use too much; but if you don't use too much, it doesn't do any thing at all. I wrote to the Mapes fertilizer people, stating to them my troubles, and they have sent me a bagful of fertilizer that they are sure will do some good. It has been applied to every fifth row of our onion-plants in the beds. To be sure that we did not make a mistake, the boys whittled a notch in the side of the bed at every row where the application was put on. Perhaps you ask why I do not let well enough alone. Because I wish to "hustle up" the plants faster than any sort of stable manure will do it. Do some of you say, "There is not *any thing* that would do this"? Yes, there is. Slacked lime and guano raked into the surface of the bed, first one and then the other, will hustle up any thing I have ever tried it on. Then why not keep on using slacked lime and guano? Because I am not working and exerimenting for myself. I am troubled, because I fear that the millions of dollars that our people are now putting into chemical fertilizers is blundering in the dark. You may say that almost all our agricultural papers are against me. You may also suggest that my soils are so rich, like friend Terry's, that I do not need chemical fertilizers, and that I must experiment on poorer soil. But our teachers are by no means agreed on this. Peter Henderson, in the first edition of his "Gardening for Profit," spoke about using *tons* of guano. I can not learn that anybody is using guano now. It costs about twice as much as many of the fertilizers. Why, I have been disappointed so many times, that, if I can just see some good result apparent in those onion-rows, I shall be ready to sail my hat in the air, and hurrah. Yes, if I can find a fertilizer in the market, in common use, that will do as much good as lime and guano, I shall be exceedingly glad. Another thing: If you examine carefully the reports of the various experiment stations, you will see that they pretty nearly agree with me; at least, they say that, with present prices of farm products, they do not see how a farmer could make it pay to buy phosphates. Now, how is it with stable manure? Why, it shows a result sharp and clear. I do not think I ever made an application of stable manure to any crop in my life where it did not show a good result right from the word *go*.

SUGAR-TROUGH GOURDS; SEEDS SENT FREE.

Mr. Root:—I have about a peck of good fresh sugar-trough gourd seed that I dislike to destroy. If any one will send a two-cent stamp for mailing a package I will send some seeds free. The gourds are large, convenient, and useful. They make cheap and excellent troughs for watering chickens; good nail-boxes; nice hanging baskets for the ladies' flowers; good to keep seed in, etc. If they are used to water bees from, they should first be thoroughly cleansed and soaked in water after the inside is taken from them, to sweeten and purify them. C. H. MURRAY.

Elkhart, Ind., March 16.

[Friend M., I am inclined to think you have got yourself into a muss; however, we will let your offer go, and see how it turns out. After the few seeds are all gone, you will have a cent left to buy a postal card, and another to pay for your time in writing to your friends that they are too late—the seeds are all gone.]

OURSELVES AND OUR NEIGHBORS.

Let not thy heart envy sinners.—PROV. 23:17.

Before I get down to the thought embodied in our text I want to talk a little about something else. This is a day and age when it seems to be quite the thing to want to get something for nothing. Farming doesn't pay; and earning money by day's work is slow and laborious. Yes, it takes lots of hard work to get even *honey;* and we have to sell it at a low price, very often, even then. The average Young American is likely to say in his heart, if he does not out loud, "I should like to get a living some easier way. I want to have some fun, and see something of the world; but if I stick to the farm or apiary it will keep me busy all my life to make both ends meet."

Now, I am proposing to discuss what has been called the gambling mania, somewhat, in this talk; but I do not believe I will begin by telling how wicked the world is. I think I will start out by giving you some instances that show there are lots of good people who do not want money or property or any thing else withou paying for it. Yes, there are boys and girls—quite a lot of them—who say by their actions if not by their words, "I do not want any thing without giving a just and fair price for it. Whatever I have in this world I wish to earn honestly, and pay for it a fair equivalent. I do not want *something* for *nothing*. I propose to *pay* my way as I *go*."

Oh how I do love to be in such a crowd of people! Don't you, my friend? They are the *salt* of the *earth*, and through them is the redemption of mankind to be attained. Only yesterday a good friend of mine, who is well along in years, dropped in during our noon service. He has just recovered from a long fit of sickness, and neither the doctors nor his friends had much hope that he would ever be up again. We were glad to see him among us. After he had by request made the closing prayer, I turned and said to him, "Now, friend G., you will have dinner with us, I am sure. Our dinner is all ready, and it will be handier and easier for you to take dinner with us than it will anywhere else." He replied:

"Mr. Root, I shall be very glad indeed to take dinner with you, but it must be on condition that I pay for it, just as the rest of your people do. I like to come in here often, and I like to stay for dinner; but I do not feel free to do so unless I pay my way. You see, this is a public dining-room. All your helpers have to pay for their dinners; and if I can pay for mine too, then I shall feel free to come in real often, as I love to do."

Again, a little time ago I chanced to take dinner with W. I. Chamberlain, at a restaurant in Cleveland. We were discussing the book on

tile drainage, which was then just ready for the press. We had a very nice dinner. When the waiter added up the bill of fare he made a mistake of five cents, and friend C. called his attention to it. I suggested that, perhaps, the waiter meant to lump it in at a little less than the amount it figured up to. "No," said friend C., "that is not the way they do here. Their articles of food are very nice and very choice, and their price for such is exceedingly low—they figure very close, therefore every one gets what he *asks* for, and pays exactly the regular printed price for what he gets."

The waiter apologized for his mistake, and thanked our friend for correcting him. Then my good friend added something like this:

"Mr. Root, I want to be just as careful in correcting a mistake that takes money *out* of my pocket as I would be in correcting one that puts money *into* my pocket."

W. I. Chamberlain would never have been held in such high esteem everywhere he goes were it not for the fact that he lives up to just that line of conduct. I do not believe that any temptation could induce him to even *want* what belongs to somebody else, without rendering a fair equivalent. You may say these are all *small things*, that I have mentioned. It is when there are hundreds and *thousands* at stake that men get to be rascals. Well, I am glad to give you some instances where large amounts do not tempt good men. Friend Terry is not very far from friend Chamberlain. By the way, I wonder if there is not a good "atmosphere" around the vicinity and neighborhood of that Western Reserve college at Hudson, O. It was started almost as early as the Oberlin school, and it has furnished the world with some grand good men. Well, friend Terry has got to be such an authority on farming matters that inventors of farming machinery are often anxious to make him a present of a sample implement, in order to have him try it. I think some firm wanted to make him a present of a potato-digger; but he told them that, if he was to give to the wide world his opinion in regard to the machine, he didn't want his judgment biased by a present. Then they proposed to let him have one at *half* price. But he would not have it at *that* price either. He said he would try the machine, and if it suited him he would pay the same price that other people paid; then, if they wished, he would give the public an honest opinion of its work, including the defects as well as its good points. You may say *this* was on a small scale too, comparatively. Well, a few days ago, by the failure of some lawyer or banker, the Governor of the State of Ohio was made not only penniless, but it would take more money than he had in the world to make good a note that he had signed with the banker who became bankrupt. There was much speculation for a time as to what Gov. McKinley would do. Without a moment's hesitation he turned over all his earthly possessions; but as it took more than one hundred thousand dollars to pay the debt, all his possessions would not cover it. His wife, however, had property of her own to the extent of some $65,000 or $70,000. Without a bit of hesitation the brave woman came forward and made good her husband's name; but in so doing it took *her* last copper, almost, and he stood before the world with a fair untarnished name, such as he had always borne; but he and his wife both had to commence the world over again. There was a good deal of murmuring among the people. Her money was given her by her father. They said that she had no business to throw it away in that way. As soon as I heard of it I said, "Such an example as this will surely not go unrewarded. The people of our land will spring to his rescue, and I should not be at all surprised if the whole sum were made up by donations, in a few weeks." While I was speaking (although I did not know it) the very thing I had predicted was being done; but, lo and behold! neither our beloved Governor nor his good wife would take a copper of the money. The great world of good people remonstrated: "Dear friend M., you *must* take it; we enjoy giving it to you. Accept it as a token of our regard and esteem; and may God help you to continue setting such an example for the rising generation and the rest of the world." But our good friend and his heroic wife would not be moved. Again and again was the money sent back. I had an inward conviction, that, in some way, I did not know exactly how, the good will of the people that was rising constantly would outwit their favorites; and when I was told that money had poured in from anonymous sources until the whole hundred thousand dollars was made up and more too, I opened my mouth in astonishment. Nobody knows—not even the Governor himself, nor his wife—who gave a copper of it. Misanthropes need not say in this case that it was to make a show, or that it was for the sake of the publicity that it would give to the donor. Nobody knows *who* gave a cent. Now, who shall say that, in view of the present craze and mania for gambling, prize-fighting, and the like, there is not any thing *good* in the heart of man? Who shall say there is not a hungering and thirsting after righteousness, in the hearts of the masses? Who shall say that we are all, even the *best* of us, after the almighty dollar, when we come right down to it? What prompted these people to pile up their money until the daily papers told them to stop—that there was enough and more too? Why, it was a simple love of justice and right. We admire from the bottom of our hearts the man who has got the backbone and nerve to make his "*I—promise—to—pay*" good, even if it takes the last copper he possesses.

Perhaps I might mention that many good people have justly criticised this fashion of underwriting for somebody else when the obligation amounts to more than he (the security) is worth. Of course, this is wrong. But there may be palliating circumstances. I have been told that the man for whom Gov. McKinley underwrote was the friend of his boyhood; that he even advanced money for him so that he might get an education when he never could have got it otherwise. Under such circumstances a generous and large-hearted man would risk almost any thing, especially for one whom he trusted with a faith that was like unto the friendship between David and Jonathan. So you see our story ought to point out to us more than *one* great moral.

Now, friends, I am sure you will not set me down as a "calamity howler" when I say that a great proportion of our people—yes, and a great proportion of our "neighbors," including some of *ourselves*—are not so scrupulous and conscientious but that we can take something for nothing. Our children, when they grow up, see so many instances of where people get something for nothing that they become demoralized. They think steady hard work is too humdrum and slow; and instead of heeding the injunction of our text, they, in their hearts, *do* envy sinners. Who blames them? When I was in New Orleans I told you of how desperately in earnest good people were in regard to the lottery business, and especially concerning the Louisiana State Lottery; and when they did get it put down, the rejoicings came to us through their letters. Did the great lottery company give it up? By no means. If they

could not ply their trade and secure victims in the United States, they concluded, like our venerable friend Hall, of the water-cure, that some foreign country might afford a field for their work; and so they offered a *million of dollars* a year for the privilege of running the lottery business unmolested in the little republic of Honduras, in Central America. There is a very significant fact here. These lottery men are keen and sharp. They had plied their trade so long, and knew humanity so well, that they risked this large sum. They have learned by experience that ignorance and superstition constitute the best soil in which to plant their seeds. There is not a nation on the face of the earth—that is, where the people have any sort of property—where you can not start the gambling mania and the mania for strong drink. Just let them get a taste, and, if they have any property to gamble away, the lottery men will get it. While in New Orleans I asked the question how this company could make it pay when everybody seemed so tremendously up in arms against it. The reply was:

"Why, Mr. Root, they get their money from ignorant, unlettered people. The colored population are crazy on it. If they have a dream a little unusual, they jump to the conclusion that it is an omen of good luck, and that it has something to do with numbers. In the same way, the most trivial incident of every-day life is interpreted to mean that they shall buy a certain number and get rich;" and when some one near them does get a prize, the whole community goes wild over it, no matter whether this affair is a put-up job or whether somebody actually drew the lucky number in good faith—if it is possible to have any "good faith" in the matter at all.

When these villainous thieves go to Honduras (if they ever do go), all they will need to do to start the craze is to give away a little money in the shape of presents, and their million of dollars will come back with tremendous interest.

A little over a year ago I told you something about the temperance and morals of Mitchell, Dakota. Are they holding the fort? Last summer, when they had their corn palace, the crowd was so great, and the excitement ran so high, they could not stop their revelry when Sunday came. The proprietor of a merry-go-round began bartering with the mayor and town council for the privilege of running his machine on Sunday. Mitchell is a godly town, and there are many earnest and devoted Christians there. I presume this man was told at first that he could not run his business on Sunday for any sum of money: it was demoralizing and wrong. But finally, when he offered the town *$200* for said privilege, even though they admitted that it was wicked, and a wrong thing to do, they decided that, if he could afford such a sum as that, they could not very well stand out. If I have been misinformed, and if this statement is not true, I wish some of the good friends in Mitchell would set me right. The point is, where money enough is offered, and especially where there are people of tolerably good standing who are in favor of letting up on time-honored customs, there is great danger that Satan will gain the day.

I rejoice to know that there is *one* paper in our land that is not afraid to speak right out plainly and clearly, no matter who gets offended, and no matter who takes exceptions. That paper is the *Rural New-Yorker*. There may be religious papers, and papers of wide influence, that are taking the high moral stand the *Rural* does in such matters; but if so, I have not seen them. Will somebody call my attention to it, if such there be? Here are some lines that I clipped from the *Rural* I was reading last evening:

For years Louisiana was the gamblers' paradise;
For years they held her firmly with a throat-grip like a vise.
Till, stung to desperation, from her sin and shame she rose,
And thrust the evil from her and shook off her cursed foes.
Thank God! Louisiana from the sinful curse is free.
But shame on *you*, New Jersey, that you weakly bend the knee.
Burn up your honest charter! Turn your heroes to the wall,
Rebind the eyes of Justice that she may not see your fall.
Toll bells in all your steeples; let their mournful notes proclaim
How Jersey's boasted honor has been turned to blackest shame.

Now, I do not know how this matter in New Jersey is coming out. I hope the above may be held up before the eyes of the powers that be, in New Jersey; and I hope that the Christian people who are leaving no stone unturned to circumvent the schemes of gamblers and politicians will come out ahead. Let us remember them in our prayers.

There are some other things connected with this gambling mania that I wish to mention. Some of you may think I am notional, and think I make a big fuss about nothing. My friend, if your children were playing with matches close by a strawstack, in a dry time, you would not think me meddlesome, even though I got over on to your premises and kicked up a row among your children; and I assure you the circumstances are much the same. A while ago there was an unusual demand for pumpkins from our market-wagon. I asked what it meant, that pumpkin pies had all at once taken such a hold on the affections of the people. The man who drives the wagon replied, "Oh! it is not the *pies*, Mr. Root. Every child in town is busy counting the seeds in a pumpkin in order that he may be able to guess with some degree of accuracy. You see, they are offering prizes to anybody who comes nearest to the exact number of seeds in a certain pumpkin or squash."

Some of our agricultural papers are offering large sums of money in gold to the one who will guess how many beans or peas or seeds there are in a jarful. The thing is varied in a thousand ways. The proprietors of a certain kind of soap offered a sum of money to the person who would write the best advertisement in the form of a poem for their particular soap. The *Sunday-School Times* tell us that over 38,000 "poems" were written. Just think of it—38,000 people worked hard; but only one, or a small number of them, got any pay at all. A good Christian friend of mine suggested there might not be any thing *particularly* wrong about it.

Suppose you set a thousand men at work sawing wood. Each one saws and piles up a cord; but instead of paying each one of the thousand a fair price for his work, you give the money all to one person and the rest get no pay at all. They went to work by your direction, with some expectation of getting some pay. One man got a thousand times more than the proper price for cutting his cord, and the rest got nothing. Is there any glimpse of a gambling mania in this direction? Some of you may urge that writing poetry is different from sawing wood. Yes, it *is* different. But if I were going to do one or the other for pay, I think I should prefer to saw wood. The *Youth's Companion* offered a large sum of money for the best story. It seems to me it was about keeping bees, but it might have been something else. One reader of GLEANINGS worked hard a great number of days and nights, and finally

neglected her work and her family, and sat up the whole of one night. She did not get any thing for her work but disappointment, and there were *thousands* who did likewise. You may say that it stimulated their ambition, and gave them a wholesome exercise in mental drill. So does sawing wood give one wholesome exercise; but what would a man think if you were to tell him that the muscular exercise he had had was all the pay you thought he ought to have. One of our neighbors went to a clothing store in the city of Cleveland, and made a purchase. They asked him to draw a ticket, or pull out an envelope, or something of that kind, and he drew *a pony*. It was a nice little animal, and the children were crazed with the idea that he got that pony by just drawing a lucky card. He did not have to work for it at all. In traveling through different towns, many such ponies and carriages were exhibited to my—not admiring gaze. I admired the pony and carriage, perhaps; but the feeling that this beautiful little animal was used as a medium for encouraging the gambling craze made me feel sick at heart; yet professors of religion, and, I fear, some ministers of the gospel, stood by and looked pleased. Thank God, the pastor over us here is not one of that sort. He said, the other evening, that any scheme that could be devised to get money or property, without rendering some kind of equivalent, was gambling. Oh how much better it would be for our nation if there were more people who thought so! How much better it would be if there were more parents and teachers who maintain that this gambling craze is even worse than giving the children matches and a strawstack near our barns and dwellings! In San Diego, Cal., when real-estate speculation got to be a gambling mania, and nothing else, a bystander told me that he saw a carpenter who was a good workman, and who was receiving large wages for his work, throw down his tools and say, "I'll be —— if I am going to earn *my* money by slow day's work when everybody all around me is making it hand over hand, without lifting a finger." Very likely he was not a profane man; but the excitement was such that nothing but an oath would fit the occasion; and he became a swearing man, and a gambler too, at the same instant. His employer could not induce him to go on and finish his contract. I was on the ground where this thing happened. I visited the place again three years afterward. Did the gambling fever then run rampant through the town? You probably know already how it turned out. In three years' time, the pretty little homes that had been built up in that beautiful land of sunshine and flowers had gone to ruin and decay. Bankruptcy, suffering, and desolation were the fruit. Let us guard carefully these little ones that are growing up around our hearthstones. Let us explain to them the end and result of guessing at the number of beans in a jar—riding, running, wrestling, or any thing else for a prize of some sort; and let us teach them to refuse to *touch* any of these good things that God has provided for us, unless they can feel that they have honestly earned them, or rendered a just and fair equivalent of some kind.

Since the bicycle has been perfected as it is now, and since it has come into general use, as a matter of course a certain class have tried to use it as a means of gambling, like horse-racing and other contests of skill and endurance; but all of our readers may not know that the L. A. W. (League of American Wheelmen), an organization numbering toward 50,000, has been from the first most positively and vehemently pronounced against riding for sums of money, or betting in any shape or manner connected with it; and, in fact, any member of the L. A. W. is at once expelled in disgrace when he is found guilty of any thing in this line. Of course, the racing and betting classes are against it, and they are waging an unceasing warfare to break down this ruling that is really the backbone of the organization.

I have hardly space left to mention this matter of offering prizes for the biggest crops. Some agricultural journals have been doing this, and also a great part of our prominent seedsmen. It may be urged that these large sums of money have a tendency to stimulate and encourage improved agriculture, and perhaps it does in one direction; but I believe I would let agriculture go unstimulated and unimproved before I would run the risk of sowing seeds of the gambling mania. There may be differences of opinion in regard to this matter; but let me remind you, friends, that you have never seen T. B. Terry's name among the contestants for the biggest crop of potatoes, no matter what prominent journal offers the $500 in gold. Inventors of chemical fertilizers are also offering large sums of money to those who will produce the largest crop by the use of their special brand. I am sure this is mischievous. Hundreds of earnest hard workers in the soil are, by these reports, encouraged to invest unduly in these brands of fertilizers, overlooking the fact that it is as much the man who uses them, as it is the fertilizer itself, and often more. The great exposition of 1876, recognizing the danger and quarrels that would probably result from offering prizes, you will remember, offered no *competitive* prizes of any sort. They rewarded each exhibitor according to the merit of his product, without any reference whatever to what his neighbor had done. *Is* not this by far the better way?

Our stenographer suggests, right here, that my teachings might do away with premiums at fairs. I have thought of this; but should not fairs follow the example of the great exposition I have mentioned? Let the judges award each exhibitor (according to merit) something to pay him for making the exhibit, the amount to depend on the care and pains he had taken, and have it managed so as to encourage all and discourage none. The man who takes something that he *did not produce*, from one fair to another, just to get the *money*, doesn't need much encouragement. How often do you hear some disappointed exhibitor say, "Well, this is the last time you will catch *me* bringing any thing to a fair to compete for a premium"!

Righteousness exalteth a nation, but sin is a reproach to any people.—Prov. 14: 34.

Order No. 18,061, shipped Feb. 21, received, and gives entire satisfaction. J. B. Griffin.
Cat Creek, Ga., March 13.

The display of my "ad" in Gleanings is all right, and I am already getting answers from it. It always pays meto advertise in Gleanings. Long may it live.
Bristol, Vt., Mar. 13. A. E. Manum.

I received the extactor all right, and was well pleased with it; and after trying I find it works to perfection. I tried it on honey taken last fall, and it worked splendidly. John H. Whitmore.
Minard, Mich., March 16.

Your articles as religious matter from time to time give a little Sunday reading for the family, and, I am sure, add very much to the value of the journal, as it is thereby appreciated by the women or other members of a family, even if the bee-man does not see any good in it; and as the money that pays for it *comes out of the family*, they each have a right to receive some return in the pleasure of its contents.
Assumption, Ill., Feb. 20. Wm. N. Root.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.
Illustrated SEMI-MONTHLY
36 PAGES 7×10
$1.00 PER YEAR.

Can a man take fire in his bosom, and his clothes not be burned? Can one go upon hot coals, and his feet not be burned?—PROV. 6:27, 28.

REPORTS are coming in, showing that cellar-wintered colonies are doing nicely. We notice that Dr. Miller reports that 94 per cent of his are alive. He wants to know why we did not put the bees and vegetables together in one cellar. Bad advice for a doctor; and, besides, Mrs. Root would not have the two together

WE notice that the *Progressive Bee-keeper* has passed into the hands of the Leahy Manufacturing Co., of Higginsville, Mo. There is no doubt that the journal will be as successfully conducted as before; and in the meantime we indulge the hope that Bro. Quigley will still remain, to a greater or less extent, at the editorial helm.

DR. MILLER says, in Stray Straws, in another column, that our top-bars are not "practically ⅞ thick," as we explained recently in an editorial. Beg pardon, doctor, but you have not seen our very latest; and the difference between the latest form and the top-bar ⅞ thick is very slight, and we are sure the bees will not take any particular account of it.

OUR subscribers will oblige us if they will overwhelm us with reports showing comparative tests this winter between colonies under sealed covers and colonies packed with an absorbing cushion. This winter will give us good data for comparison; and it is only by comparing scores of reports that we can get at the truth. We have not a particle of bias either way. If the sealed cover "must go," let it do so.

THERE are very few writers who can criticise, and yet do it so nicely as not to give offense. There are many who make an attempt at it, but their criticisms are bungled up with so many apologies, and "hems and haws," that the real force of the criticism is lost. Our friend R. L. Taylor has the happy faculty of giving straight clean criticism, without the apologies and without offense to the criticised. We need several such writers in our ranks; and we hope that Mr. Taylor will keep his pencil a pushing. If it pushes *us* over we will try to get up if we can.

A VERY interesting biographical sketch of a comparatively new writer on bee-lore, Miss Emma Wilson, appears in the *American Bee Journal*. It will be remembered that Miss Wilson has written considerably for the Ladies' Conversazione of GLEANINGS; and her pithy, brief articles, have, as a general thing, contained a good deal of value, not only to the bee-keepers of her own sex, but to those of the sterner sort. We have been thinking for some little time back that our readers would like to see a picture of her, but Bro. York has got ahead of us. Well, we are rather glad of it, because he has done it so well.

AMONG the queer things that find their way into the coin-slot automatic phonographs that are found in many of our depots throughout the country is a copper medal, or sort of coin, bearing the following inscription: "R. S. Torrey, inventor of the Maine State bee-hive. 1864. Bangor, Me." On the reverse side is a shield with a motto across the front, with the word "Union." It is about the size of an ordinary penny, and was slipped into the coin-slot of a phonograph in Cleveland by some person who *thought* he could cheat the machine and thus save the regulation nickel. The phonograph will not only talk and sing, and dish up any kind of music, but it is smart enough not to be "taken in," even by a *man*, although it "took in" his bogus nickel. The phonograph people forwarded the coin on to us because of its peculiar inscription. Who knows any thing about that "Maine State bee-hive"?

G. W. YORK is making the old reliable *American Bee Journal* fairly boom. Every page shows that he is putting a good deal of hard work on it, and we hope that his subscription-list may roll up strong: for we have always noticed that, when any of our rival publications are booming well, it helps boost along GLEANINGS; so you see we are interested from a selfish point of view. Why is it that editors of publications in other lines fail to see this? They look upon a successful rival as dangerous to their own success, and then write more like an idiot than a responsible being. But perhaps a point should be made here: An editor who takes no interest in his own publication but to get out copies of his paper filled with "stuffing" will almost surely suffer if there is an energetic rival in the field. He who is jealous of a rival, confesses the weakness of his own efforts in the journalistic line, and he had better step down and out. Such kind of editors are not wanted, and sooner or later they are *obliged* to step down and out.

MR. ALLEY AND THE PUNIC BEES, AGAIN.

REGARDING our editorial in the last issue, page 228 on Punic bees, Mr. Alley desires us to say that he did not mean that *we* were unfair. We are very glad to be corrected, as we do not wish to do Mr. Alley any injustice; but his language by immediate connection conveyed that impression quite strongly, and was so understood by some of our correspondents. But it was not Mr. Alley's intentional or unintentional statement in regard to the attitude of GLEANINGS toward Punic bees, to which we took exceptions, but his disposition to make it *appear* that the Punics were *very desirable*, and that "nearly every issue" of his paper contained favorable unsolicited testimonials. We do not think for a moment that Mr. Alley intentionally misrepresented, but we felt very sure that he made the statements offhand, without properly investigating the truth, and we only desired to show he was a long way from being correct, and that the Punics were decidedly undesirable. We are glad to feel that Mr. Alley is conscientious in the matter, and that he has no desire to inflict any undesirable race of bees on American bee-keepers, simply for the "filthy lucre" that there may be in it. If other queen-breeders have abandoned them he can not afford to sell them.

SHALLOW BROOD-CHAMBERS AND THE SHAKE-OUT FUNCTION CENTURIES OLD.

IN another column will be found a very interesting and valuable communication from our friend Mr. Frank Benton, wherein he says that the shallow brood-chambers about six inches deep have been used in Carniola for *centuries*. Incidentally, further on, he tells how the "shake-out function" is practiced by the native bee-keepers with these same brood-chambers. All of this is exceedingly interesting—the more so as Mr. Heddon has claimed, if we mistake not, that these ideas were entirely new and original with himself. We have seen references to both of these things before, but were not aware that they were ideas that were older than almost any thing else used in apiculture. The

fact that the shake-out function is and has been practiced successfully by the Carniolan bee-keepers, and was also employed by Mr. Benton in making successful catches of queens, goes a long way toward establishing its practicability. By the way, is it not a fact that Carniolans are better adapted to shaking out of a hive than Italians are? The latter don't "shake worth a cent."

THE BICYCLE AS A NECESSARY ADJUNCT FOR THE OUT-APIARY BUSINESS.

On page 260 of this issue, our old correspondent J. A. Green has a valuable article on the bicycle—its probable future and its value to the bee-keeper. We indorse every word of it, and we wish to emphasize especially what he says to the effect that a wheel is not an expensive luxury, but one of the "most practically useful inventions ever produced." We would no more think of managing a series of out-apiaries, without a bicycle, than we would think of going without an overcoat during winter. They are both comforts in their way, and, as we view it, equally necessary. You don't believe it, do you? May be you will some time. But you say you can not carry luggage to the extent of 50 or 100 lbs. Our own experience, as expressed in these columns, has shown emphatically that this is a mistake. As we said in our essay at the Michigan State Bee-keepers' Association a year ago, by a little forethought and a little headwork one can arrange matters so that the heavy carting can be done a good deal with a livery team in the spring and fall; and in the meantime the apiaries can be visited, and 25, 50, or even 100 lbs. can be carried back and forth quite easily on the wheel. The bicycle will nearly if not quite take the place of a light horse and buggy. It will cost only half as much, and the cost of maintenance is practically nothing. The bees may sting like hornets, but the wheel pays no attention to it. It is never obstreperous, and can be run for all the life there is in it, without being inhumane to it. Our last trip last fall was a run of 42 miles in three hours and a half. If you are not a bicycle-rider you'll not believe this.

TAYLOR'S METHOD OF FASTENING SHEETS OF FOUNDATION TO SECTIONS.

R. L. Taylor describes a very simple and practicable method of putting foundation into sections, in the last *Bee-keepers' Review*. As the editor has boiled down the description of the *modus operandi*, and the tools, we reproduce it here:

It works upon the hot-iron-melted-wax plan. Attached to the upper surface of a board are perhaps twenty little, nearly square, blocks of wood, each exactly large enough for a section to slip down over it and leave a ⅜ space at one side. We may be getting a little ahead of our story, but we may as well say, right here, that, when a section is placed over a block, it is so placed that the ⅜ space comes next to the top-bar. The upper surface of these blocks is not level; one side of each block being perhaps half an inch higher than the opposite side. Upon the upper surface of each block is a little sliding platform ¼ of an inch in thickness, and nearly as large as the block. When one of these little platforms is slid, it "slides down hill" upon the slanting surface of the block underneath. To keep these little platforms in place, a ⅜ square strip of wood is tacked to the bottom of each. Each strip of wood extends nearly the whole width of a platform, and fits into a corresponding groove cut into the block beneath:

The work of fastening foundation into sections is performed as follows: Upon each of these platforms is placed a square piece of foundation that will nearly fill a section. After putting on a piece of foundation, a section is slipped on over the block; and the height of the block and platform combined is such at the lower edge that, when the fingers are placed upon the foundation, and the foundation and platform "slide down hill," the lower edge of the foundation comes in contact with the center of the under side of the top-bar of the section. Before the sliding operation is performed, however, a piece of hot iron, shaped something like a broad, thin chisel, or a square-pointed trowel, is slipped down between the top-bar of the section and the edge of the foundation; then the latter is pressed against the iron, and, as the iron is quickly withdrawn, the melted edge of the foundation is brought in contact with the top-bar of the section. By the time the twentieth piece of foundation is fastened, the operator can begin at No. 1, and remove the sections in the same order that the foundation was put in, placing them in the supers. The irons for melting the edge of the foundation are two in number, one being heated over a gasoline-stove while the other is being used. Each iron is nearly ½ of an inch thick, as wide as the inside of a section, and furnished with a handle. To each iron is also added, upon the back side, a stop that strikes the edge of the top-bar of the section, thus preventing the iron from being pushed down too far, which would keep the wax in contact with it for too great a length of time during its withdrawal.

This plan is a modification of the idea contained in our Daisy foundation-fastener—with this difference, that the Daisy is a machine and his is a tool. It has this advantage, that the edges of the sheets have an opportunity to cool and make good contact. We have no difficulty in this line with the Daisy foundation-fastener, except in full sheets, and then we work a little more slowly. Mr. Taylor uses the hand implement very much as a tinner would use a soldering-iron—when one becomes cool, the other one is used.

R. L. TAYLOR'S CRITICISMS ON THE SELF-HIVER.

In the last *Bee-keepers' Review*, R. L. Taylor has an interesting article on self-hivers versus queen-traps. He has been accustomed, he says, to look upon the struggles of the half-dozen inventions of self-hivers as a source of amusement; and he can not see that, so far, they even *promise* any thing. The queen-trap, he thinks, will accomplish all that can be expected of the self-hiver, be much cheaper, and easier of inspection of what has been actually accomplished; and he adds:

If there has been swarming where traps are used, the apiarist, by walking rapidly along the rows of hives, discovers at a glance where it has been, but how is it with the hivers? Suppose you have an out-apiary of 150 colonies, you must raise at best 150 covers to determine where the swarming has occurred; or if the Pratt hiver, the one that seems to be in the lead, is used, you must lift 250 old *hives* with the supers, heavily laden, as they are likely to be, to determine from which hives swarms have issued, for the hiver is put under the old colony; and this every time the apiary is visited, if justice is done. The editor of Gleanings says of Pratt's tiering-up hiver: "The lifting of the upper story is no great objection." Whew! I feel exhausted at the very thought of it. And then suppose three or four or five swarms had come out at the same time and had united, as they would surely do if they were at all like mine, and had gone into one of the hives together, you would be sure the hiver was a great success, but you would be quite oblivious of the three of four queens hid away in the corners of as many other hives with a teaspoonful of bees each.

This looks as if our friend R. L. had rather "laid us out," and perhaps he has; but when we spoke of "lifting" the upper story, we remember we did not say just what we meant. What we have been in the habit of doing is, not to *lift* but to *slide* the story around "cat-a-cornered," and a glance down one of the corners shows what has been going on. Not desiring increase, we let 'em alone whether they swarmed or not. But our experience last summer taught us that we do not need to do even the sliding act. The Pratt hivers that we used caught the bees—yes, the whole colony—and, in a majority of cases, we just simply left them alone for a week, for it made no difference to us whether the bees had

swarmed or not and we examined them only as soon as other work required it. In one or two instances the colonies did not swarm; but the bees went below and filled up a set of extracting brood-frames with honey. But perhaps our friend Taylor would prefer comb honey instead of extracted. Well, in that case the difficulty could not be entirely avoided; but we would suggest that an extra super be placed under the automatic swarming-board, together with the brood-chamber, and then the bees could be left for a week or ten days, or even longer.

It is true, as he says, that several swarms may come out together and unite; but, if we are correct in our observations, they are not nearly so apt to unite when none of them have a queen. Realizing that something is wrong, they go back to headquarters to find out what the matter is; and having done this, they do just what we want them to do—go into the new hive. Now as to the expense of the Pratt hivers being greater than the traps, we will say they are nearly as cheap. All that is required is a honey-board with the Pratt bee-escapes, the same being used with hives and supers, that every apiarist is supposed to have on hand.

Referring to the Ailey traps, we would say than we have used them in just the way Mr. Taylor speaks of; but unless we were present on the day that they came out, and took care of the bees clustering around the traps, mischief followed sooner or later. The bees, having been thwarted in their efforts to carry out the instincts of nature, remained in the hive, frittered away their time doing nothing, and finally ended up by killing the queen. What we want is something that may not require attention for a week or ten days. Out-apiaries are frequently left that length of time.

In conclusion we will add that we think, with the editor of the *Review*, the automatic self-hiver promises well. But this is really all we dare say at present, for the experiments that have so far been made are not of sufficient magnitude to give us *entire* assurance of their success.

ANOTHER SIMPLE MEANS FOR DETECTING THE PRESENCE OF GLUCOSE IN HONEY; A TEST THAT EVERYBODY CAN APPLY WITH VERY LITTLE EXPENSE.

In another column will be found a translation of a valuable article taken from the *Bienenvater*, describing simple tests for detecting various spurious mixtures in honey. The one given for detecting the presence of glucose—namely, the addition of pure spirits of wine, or alcohol, to the suspected honey—seemed to us so simple as to be almost absurd. We have for several days had on hand honey from a certain source having the unmistakable flavor of glucose. So pronounced was it that we had not the least doubt *in our own minds* but that the honey was adulterated. After reading this glucose test, we immediately procured some alcohol and introduced a quantity of it to a small sample of the suspected article. A little stirring soon produced a milky-white appearance; and after a little there was quite a decided white precipitate, showing quite conclusively the presence of glucose that had manifested itself so clearly to the taste. Other doubtful samples—samples that we suspected from the taste—showed like results. Now, to make sure the test was reliable, we also procured a sample of basswood that we *knew* to be pure. We thought, if the introduction of alcohol into this produced a milky precipitate, this glucose test would be of no value. Upon putting the honey to the test, the alcohol had no perceptible influence upon it, and the honey remained as clear and limpid as before. We next tried a sample of genuine pure glucose. The strong milky precipitate was more marked than in the mixtures of honey and glucose—just about what we would expect.

From all this incidental experimenting, we observed that glucose mixtures of honey, on being vigorously stirred, will show the presence of beautiful, almost spherical, globules or bubbles of air. The glucose in honey seems to have a peculiar faculty for involving a minute quantity of air, and holding it there for several days at a time. Indeed, the presence of these large bubbles is quite suspicious, and we believe we could tell honey with glucose mixtures, by the mere appearance. The strong glucose taste would then give us a double assurance. If this were then further corroborated by the alcohol test, what more should we need? True, we could not tell the exact *quantity* of glucose in the honey; but the offense is just as great, if we understand the law properly, whether a large or a small quantity of "the stuff" is used. As it would not be profitable to put in a small amount, it is presumable that, when the presence of glucose is shown by the tests already given, at least 50 per cent of the baser article would be put into the honey. A man who would be mean enough to adulterate would not stop at 25 per cent—he would put in 50 per cent or more to increase the profits.

Now, it seems to us that this alcoholic test is so simple that it will be exceedingly valuable to honey-buyers; and when it becomes noised abroad so that everybody knows about it, it will make mixers of glucose sufficiently careful so that they will either stop adulterating altogether with that article, or, if not, place them in a position for easy detection.

In the mean time we solicit samples of honey that taste bad. Send them by mail, marked with sender's name, put up in stout wooden boxes. The vial should be as large as possible, securely stoppered, and wrapped in paper inside the wooden package. We shall take pains to test thoroughly all samples submitted to us, and report confidentially to all those desiring information. If we have reason to believe they are adulterated, the facts will be placed in the hands of the manager of the Bee-keepers' Union. We would suggest, however, that all honey-buyers and commission houses acquaint themselves thoroughly with the tests already given, in order that they may be prepared to investigate and trace promptly all suspected honeys from doubtful sources. Perhaps we ought to state, that, in order to get the cloudy appearance from glucose mixtures and alcohol, the suspected honey should be *thoroughly* stirred for several minutes. If it is adulterated with corn syrup, the cloudy precipitate will very soon make itself manifest.

Would-be adulterators have tried to cling to the hope that chemists can not detect glucose adulterations; but that hope is now gone, or it had better "be gone" very soon, for the Bee-keepers' Union, we hope, will very soon lay its heavy hand upon—well, we are not going to tell.

P. S.—If we understand matters correctly, chemists have long used the alcoholic test for showing the presence of glucose. It is only *one* of the means they employ, the result being verified by several other tests well known to them.

Later.—After writing the above, the *Evening Star*, published at Steubenville, Ohio, came to hand containing some startling statements to the effect that one of our old correspondents, J. A. Buchanan, of Holliday's Cove, W. Va., had not only been selling, for a year or so back, honey adulterated with glucose, but that he actually pleaded guilty when the inspector for the State Food Commissioner took proceedings against him in court. The paper goes on to state that Mr. Buchanan was fined $35.00 and

costs, which he paid, and begged, "For God's sake, keep it out of the papers." We have always regarded Mr. Buchanan as not only a reliable correspondent, but an honest man, and we are scarcely able to credit the report. We have written to him and to the editor of the *Evening Star*, for further facts. We should be glad also to receive light from other sources. In our issue for April 1, 1892, we published an article from Mr. Buchanan, relative to selling extracted honey. One of the paragraphs is as follows:

As we sell honey in every town and city within quite a distance of us, we see much of the honey-markets. Within the last two years many city packing-houses have gone into the business of putting honey in tumblers and bottles. Some of this we find to be good pure honey; but for the most part it is a glucose mixture surrounding a small piece of comb honey. Does this honey, or stuff, detract any from our sales of choice honey? We think not; in fact, we are of the opinion that we sell more honey because of this adulterated stuff.

We thought nothing of this at the time; but *if* Mr. Buchanan has been guilty of adulterating honey, as alleged, it may explain his reasons for writing that paragraph.

We sincerely hope that the statement in the *Star* may prove to be untrue; for if it is coming to such a pass that bee-keepers themselves are beginning to adulterate, and have been doing so for a year or so back, we are in a bad plight indeed. We can not believe that more than one bee-keeper, or at most two, have been engaged in this sort of business; at all events, we shall spare no pains to probe to the bottom the alleged reports in both cases; for it has been hinted around of late that another bee-keeper has been up to the same business; and some facts that have been coming to light rather lend color to the reports. The fact is, dear readers, too many have been sailing under the impression that adulterations with glucose could not be detected. This is now a most mischievous error, and should be corrected at once. It may be that the knowledge that glucose is now easily detected will prevent many from beginning the vile practice, and at the same time cause others to cease altogether who have been so engaged.

SWEET CORN FOR CANNING.

There has been so much surprise expressed in regard to the excellent quality of the canned green corn, mentioned on page 232 of our last issue, that we have asked friend Cummins to tell us what kind it is, and how he grows it. Here is his reply:

We had the field I drove you through (when in rye) all in sweet corn last year, planting it the last days of June, after plowing under that crop of rye. The yield was over 4 tons to the acre, which was large, considering the late planting. The crops of sweet corn the farmers raise for us seldom reach 4 tons—averaging about 2½. *We* usually average, where we planted in May or *very early* in June, about 5 tons per acre. Last season was quite favorable for late planting. We had nice sweet corn, right from our garden, on our table until into November. Prof. Green, of the experiment farm, was here in November, and expressed his great surprise at eating sweet corn, right from the stalk, at that time of the year. We use Stowel's Evergreen corn; and when we do not grow our own seed we buy of C. S. Clark, Wakeman, Ohio. We have always found his seed reliable. The growth of the corn has much to do with the quality. On rich land that well grow 4 to 5 tons of good ears to the acre, the corn is much better than that grown on poor land. D. Cummins.

Conneaut, O., March 23.

Friend C., if you had told us how many bushels of corn make a ton we should have known more about it. I will say to our readers, that the ground mentioned had been manured with the refuse from the tomatoes from the canning-factory—that is, in spots; and I did not consider the rye any thing remarkable, except where this tomato pomace had been scattered. I quite agree with the statement that corn grown on very rich ground is very much sweeter and nicer than that raised on poor soil. This is an encouragement for high-pressure gardening and farming. You not only get a larger crop, but it is finer-looking, and of decidedly better quality for the table.

THE TIMBRELL STRAWBERRY.

Most of you have probably noticed how much this has been boomed by the *Rural New-Yorker*. Probably many of you will give it a trial. We have five plants growing in that new greenhouse, and will have enough more to make a dozen. The problem is going to be, how many good strong plants can I secure before freezing weather comes again, from one dozen plants in the spring? I expect them to cover a big piece of ground.

SPECIAL NOTICES.

LABEL AND JOB-PRINTING CATALOGUES.

Our supply of label catalogues was exhausted a few weeks ago; and, owing to the crowd of work in our job-printing department, we have not been able yet to print a new supply. We hope to get at it soon, and intend to combine the label and rubber-stamp catalogues in one. It may be a month or six weeks before these price lists are completed, and we would, therefore, ask your indulgence for a time. All applications are on file to send the catalogues to our friends as soon as ready.

FREEMAN POTATOES.

So far as I am informed, this potato at the present time stands at the head of the list; that is, it possesses more desirable qualities, all together, than any other potato before the world. Through the kindness of some of our subscribers, we have been enabled to get hold of six barrels. While they last, we will furnish them as follows: 1 lb. by mail, 40 cts.; 3 lbs. by mail, $1.00; 1 lb. by express or freight (to be shipped with other goods that you may order), 15 cts.; 1 peck, $1.00; 1 bushel, $3.00; 1 barrel, containing 11 pecks, $6.50. Potato-eyes from the Freeman potato, postpaid by mail, 20 cts. for 10; $1.25 per 100. Terry will plant Freeman potatoes, and *no other*, this present season.

PRIZE-TAKER ONION-SETS.

Quite a good many have asked the question, "Which would give us onions quickest—sets or plants?" In order to settle the question, we have purchased a bushel of Prizetaker onion-sets; and any one else who cares to test the matter can do so. The sets are small-sized, so you get about 175 in a quart. At this price, the plants at $1.00 per 1000 would be rather the cheapest. Sets, however, may be put in the ground a little sooner than it would do to take the plants out of the hot-beds or cold-frames. Price of sets, per quart, 30 cts.; peck, $2.00. If wanted by mail, add 10 cts. additional per quart for postage.

THOSE CANNED IGNOTUM TOMATOES, CANNED PUMPKINS, ETC.

The tomatoes are all sold out. In fact, at the very time I offered them to the readers of Gleanings for $1.00 a dozen they were worth $1.15 at wholesale. So much for not reading the papers and keeping posted. As a matter of course, we are all sold out. We can, however, furnish canned pumpkin, put up by friend Cummins, the man who tells us about that extra nice corn, in previous column, for 90 cts. per dozen; and for a case of two dozen, shipped direct from the factory, we will make the price only $1.50. Of course, this is subject to change, without notice.

PARSNIP SEED AT A VERY LOW PRICE.

It is a shame that the world is not better supplied with parsnips, while they can be grown so cheaply, and while it is also true that it is a crop that does not have to be harvested. You can take them in the fall, and sell them if you choose, or you can put

them into your cellar and market them during the winter, or feed them to your horses and cattle; and if you get behind with your work, and the ground freezes up before they are gathered, it does not hurt them at all, but does them good. In fact, you do not need to remove them from the ground until you want to use the ground for something else in the spring; and you can raise, on ground suitable for the purpose—dear me! no one knows how many bushels per acre—certainly a thousand, and perhaps two thousand. All kinds of farm stock are passionately fond of them. Just give them a bite and see. The principal point about raising them is to get the seed in early, before the weeds start; so you ought to get at it right off now. In order to help you along, let me say that we have a fine stock of seed that we can furnish, until further notice—single pound, 25 cts.; 10 lbs., $2.00; 25 lbs. at only 18 cts. per lb.

VEGETABLE-PLANTS READY TO SHIP APRIL 1.

Perhaps we are hardly up to the times, but in one respect we are after all. With us it is too cold to think of putting any thing outdoors without either cotton cloth or glass over it. The seeds of peas, beets, onions, etc., will do well enough in the ground; but I am inclined to think that our heavy freezes will not help them any. To prevent our work from crowding all at one point, however, it may be well to get in these hardy seeds, and perhaps some early potatoes, whenever the ground will permit. If you want your potato s real early, however, they had better be under cloth or glass.

Of vegetable-plants, we have Jersey Wakefield cabbage and Henderson's Early Summer, ready to send out. Of onion-plants, we have only the Extra Early American Pearl. It is a little singular that we should have these before any of the others; but they had a chance in that greenhouse, and the other kinds didn't. The Yellow Danvers, White Victoria, and Prizetaker, will probably do very well to ship in about ten days, but they will be rather small, even then. Of tomato-plants we have Livingston's Beauty, Ignotum, and Dwarf Champion; but they will be stronger and better in about ten days than they are now. Celery-plants, none ready to send out yet.

MAPLE SUGAR AND SYRUP.

So far this spring the demand is in excess of the supply. We have orders booked for quite a number of barrels, and one inquiry for a lot of three carloads. The weather has been such that there will be a short crop, and most of it is late, endangering the quality. We have always had plenty for orders in former years, and expect to this year, although we may not be able to ship it as early as some would like it. Prices for No. 1 sugar, 10c; No. 2, 9c; No 3, 8c; 50-lb. lots, ½c off; 300-lb. lots, 1c off.

Choice syrup, $1.10 per gallon; 10 gallons, $10.00.

SPRAY PUMPS AND SPRINKLERS.

Our readers may not all have noticed the two pages in our last number, devoted to the best outfits for spraying fruit-trees. We wish to call special attention at this time to a change in the quantity price of Smith's Daisy force pump, which reached us just after the last number was printed. The correct price is given on page 12 of the new catalogue we have mailed you, and is as follows:

Each, $1.00; 3 for $2.80; 1 doz., $10.00; 2 doz., $18.00; 3 doz., $25.00; 6 doz., $45.00; 12 doz., $85.00. These prices are made by the manufacturer, and we are requested to strictly adhere to them. For cash with order, for 1 doz. or more, you may deduct 2% cash discount.

ROOT'S SECTIONS AND FOUNDATION.

We have had a good deal to say in this department recently in regard to the excellence of our sections and comb foundation, as we are now turning them out. We want to share with you some of the kind words we have lately received, bearing us out in our claims. We have arranged to supply M. H. Hunt, Beech, Mich., with our sections this season for the first time in a number of years. On receipt of the first shipment he writes as follows:

"The goods are here, and every thing is all right; the sections are fine, and certainly a grea timprovement over the planer-sawed ones."

You notice they are so nice that he did not recognize them as planer sawed at all, while in reality that is just what they are. Then H. G. Acklin, of St. Paul, Minn., on receipt of his carload of goods, writes as follows:

Mr. Root:—The car of our goods arrived in good order, with the exception of one or two packages mashed a little during transportation. The hives are of good lumber; the dovetails are cut clean and smooth, and they fit exactly when put together. What a satisfaction to nail up and send out sample hives—no pickin's—all good! There is no question but the average bee-keeper would be wise in selecting the Cowan extractor for use. It is ahead of any thing in the extractor line for bee-keepers having from 50 to 200 colonies of bees. I fail to see where you can make any better sections by your new machinery. Possibly the cost of manufacture may be reduced. The brood foundation is the best I ever saw, and the surplus foundation the nicest and whitest I ever saw. H. G. ACKLIN.

Henry Bohlman, of Defiance, O., writes: "Your comb foundation is the finest I ever saw." These are only a sample of the many words of praise we are receiving almost daily. The best part of it is, we were never better prepared to fill orders more promptly for sections and foundation, as well as other goods, than we are now. We have over a million of these fine sections in stock. Of comb foundation, we have made up since last October about ten tons, of which over seven has been shipped, and we have about three tons of stock to draw on. We shall be pleased to mail free samples of sections and foundation to any one interested, and still better pleased to fill your orders by mail, express, or freight. We will meet the prices of any competitor for an equally good article.

WIRE NETTING, SHORT ROLLS, ETC.

As announced in last issue, we submit below a list of the short rolls and remnants of wire netting that we have just received from the factory. We still have a good supply of 2-inch No. 19 netting 4 feet high, which we still offer at these special prices: 1 roll, $3.60; 5 rolls, $17.50; 10 rolls, $34.00. This you notice is 10c a roll higher than our last offer on this size. We have the 3-inch Nos. 19 and 20 from 36 to 72 inches wide as given in last number. We have put the price on the following pieces at the same rate as full rolls, except on the 72 inch, on which we offer an extra 10% discount.

Of 2-inch mesh No. 19 wire, we have the following remnants and short rolls at ⅞c per square foot. The figures at the left give the width in inches, and the other figures give the length of each piece in feet. Multiply this by the width in feet, then take two-thirds of the result to find the price of each piece.

12	31, 35, 40, 52, 65, 75, 103, 109, 117, 123, 130.
18	24, 48, 50, 57, 59, 66, 77.
24	8, 10, 21, 44, 48, 55, 59, 69, 75, 81, 81, 90, 92, 93, 96, 97, 97, 98, 104, 114, 120, 124, 128, 131, 143, 147, 147.
30	15, 24, 45, 50, 60, 62, 64, 70, 90, 91, 101, 107, 123, 137, 140, 144, 146.
36	9, 16, 18, 18, 19, 25, 26, 30, 38, 40, 40, 40, 46, 49, 50, 50, 50, 50, 53, 54, 55, 56, 58, 58, 64, 73, 73, 73, 74, 75, 75, 82, 83, 84, 84, 84, 87, 87, 90, 90, 92, 94, 96, 96, 96, 99, 100, 100, 100, 100, 100, 100, 100, 100, 100, 102, 102, 102, 105, 105, 109, 110, 111, 114, 115, 116, 118, 120, 120, 122, 124, 124, 125, 125, 128, 129, 129, 130, 130, 138, 141, 142, 142, 143, 143, 144, 144, 147, 147.
42	16, 20, 79, 109, 124, 131.
48	9, 10, 11, 12, 20, 20, 25, 29, 32, 35, 38, 40, 46, 48, 50, 50, 55, 55, 60, 60, 61, 64, 67, 68, 73, 75, 75, 75, 82, 83, 84, 86, 87, 90, 94, 96, 98, 98, 100, 100, 100, 102, 102, 103, 111, 119, 120, 120, 122, 123, 123, 124, 130, 138, 138, 140, 140, 143, 144, 144, 144, 144, 145, 145, 145, 145, 146, 146.
54	72, 88, 88, 143.
60	45, 53, 62, 71, 73, 73, 75, 78, 87, 96, 101, 101, 101, 105, 107, 110, 120, 123, 124, 138, 140, 144, 144, 146, 146.
72	16, 20, 20, 38, 40, 42, 42, 42, 45, 47, 48, 57, 62, 66, 71, 73, 75, 75, 81, 82, 85, 85, 88, 88, 93, 100, 100, 100, 107, 110, 112, 119, 120, 123, 124, 125, 134, 142.

Of 2-inch No. 20 we have the following pieces at three-fifths of a cent per square foot. Arrive at the price in precisely the same way as above, taking three-fifths of the number of feet instead of two-thirds, to get the price in cents.

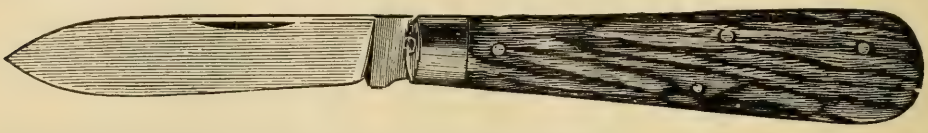
12	42, 69, 98 143.
18	100.
24	33, 120, 138
30	32, 39, 73, 105 105, 120, 140, 140, 140, 146.
36	12, 20, 22, 36, 38, 39, 56, 57, 66, 68, 75, 79, 81, 86, 88, 100, 100, 100, 110, 119, 120, 122, 125, 126, 128, 128, 132, 134, 136, 138, 140, 141, 144, 145.
42	142, 143.
48	36, 41, 49, 55, 60, 66, 70, 75, 85, 86, 92, 98, 104, 105, 114, 123, 125, 140, 143, 145, 145.
54	145.
60	27, 44, 46 48, 50, 51, 60, 73, 103, 105, 119, 125, 139, 139, 147.
72	25, 38, 44, 45, 70, 75, 76, 79, 100, 100, 128, 137, 139.

In lots of 5 pieces, any one or assorted kinds, deduct 5%; 10 pieces, 10%; 25 pieces or more, 15%. On the 72-inch netting you may also deduct 10% on single-piece orders; or, in addition to above, on quantity orders. First come, first served. Generally these pieces go off very rapidly, and it may be well to name a second or third choice in case your first may be gone.

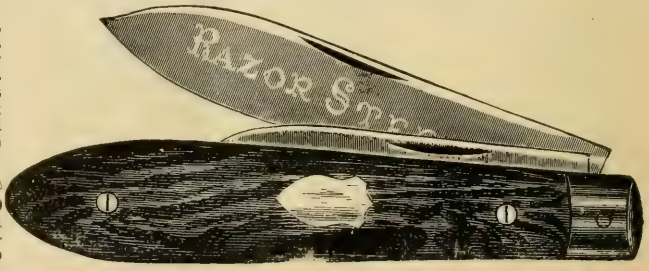
HAND-FORGED AMERICAN POCKET-KNIVES.

SOME CHOICE GOODS AT A BARGAIN.

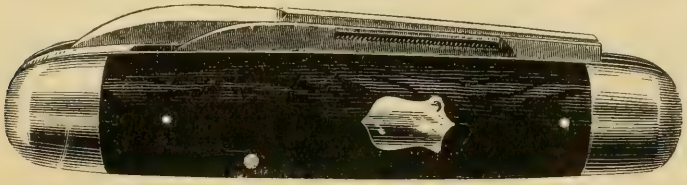
Up to the fall of 1891 the American Knife Co., of Thomaston, Conn., had for twenty-five years been making pocket cutlery that has been the standard of excellence, and not surpassed by any made in America. By unfortunate circumstances they had to make an assignment. We have recently purchased one hundred and forty dozen of four or five styles, at prices from 10 to 30 per cent less than the same quality of goods can be bought to-day in any quantity at wholesale jobbers' prices. We are giving our readers and their friends the benefit of this low purchase. This list includes our special bargains, though we have many other styles given in our price list.



Ten-cent American Knife, exact size of cut, either sharp or round pointed blades. This has been one of our leaders for many years, and is still as good as ever. Blades are best steel, and the knives are well finished Price 10c each; by mail, 12c; or given postpaid for one subscription, either new or renewal. One dozen by mail, postpaid for $1.25, or $1.10 sent at your own expense, with other goods.



Our 30-cent Big-bargain Knife, 2 blades. We have no cut that accurately represents this knife, but we consider it a big bargain. It is the same length as the cut, but thicker. It is brass lined, and German-silver tipped; has best hand-forged razor-steel blades, which we can furnish either spear point or clip point. Handles are either ebony or cocoa; 40 or 50 cents would be the usual price for such a knife; but by taking a quantity we are enabled to make the price 30c; 6 for $1.50. Postage, 4c each extra. Given free for **one new** subscription with $1.00, and 4c for postage.



Excelsior Knife, No. 46; price 40c; 6 for $2.00. By mail, 5c each extra. This is exact size of cut, but the shield inlaid in the handle is a little different. It has two blades, as shown, is brass-lined with German-silver tips, cocoa handle. The same pattern of knife is usually retailed for 60 or 75 cents, and could not be sold for less than 50 cents if we had to pay the prices asked by manufacturers at present. We got 57 dozen of these, so we have enough to treat a good many of our readers with one of the best bargains it is often your good fortune to meet. Price 40c each; 3 for $1.10; 6 for $2.00. By mail, 5c each extra. Given free for one new subscription with your own renewal, and $2.00, with 5c to cover postage.

Diamond Knife, No. 2255, price 50c; 6 for $2.50. This is the same knife we have been selling for a number of years. It is the same size as No. 46 above, but the handle is diamond shape, large in the middle, gracefully curving to the end. It has two hand-forged razor-steel blades; is brass-lined, with German-silver tips and ebony handle; a splendid knife for 50c; 3 for $1.35, or 6 for $2.50. By mail, 5c each extra. Given for one new subscription, with your own renewal and $2.00, with 5c for postage.

Ladies' Penknife, or Queen-cell Knife. Price 15c. By mail, 17c; 6 for 75c, or 85 by mail. This is 3 inches long, closed; 4⅝ open, with a long slender blade $\frac{3}{16}$ wide, hand-forged from razor steel; brass lined and ebony handle; a wonderful bargain for the price. Given free for a subscription to GLEANINGS, either new or renewal.

NICKEL-PLATED STEEL-LAID SHEARS.

Less than half usual prices. We bought 350 dozen in one lot to make it possible to offer these prices.

TABLE OF PRICES.

	Post.	Price each.	½ doz.	3 doz.
6 inch Leader Shears	5	.20	$1.10	$ 6.00
6½ " " "	5	.25	1.25	7.00
7 " " "	5	.30	1.40	8.00
7½ " " "	5	.35	1.60	9.00

These shears are seconds, with occasional blemishes, which do not hurt them for service, but shut them for the money. You will be agreeably surprised with the excellence of these shears out of the best grade, that they order more. Almost every one who orders is so pleased with them

A. I. ROOT, Medina, Ohio.

Did You Know

That my 44-page Catalogue is now ready? I have the largest stock of Bee-keepers' Supplies in New England, at prices away down. My brand of XX White Thin Foundation, 12 feet to the lb., is the finest in the market (so say my customers). Just send a postal for samples and prices, before you forget it. Address

WM. W. CARY, Colrain, Mass.

In writing to advertisers please mention this paper.

Blow!

Of course we "blow" about our queens, and why should we not? It may not be modest, but it is business; besides, if you are not satisfied that we do as we agree (which see in our price list), we will return your money, and A. I. ROOT SAYS SO.

See here:

"My best colony stored 96 lbs. of clover honey (I got the queen of you); next best, 72 lbs. I got their queen of ——. JAS. PRATT, Corning, Ia."

Think of that! A difference of 24 LBS.! enough to buy three queens!!

Try one of our 5-banded Golden Italian Queens.

S. F. & I. Trego,

Swedona, = = = Ill.

Please mention this paper.

Headquarters in the South for

BEE-KEEPERS' SUPPLIES

DOVETAILED HIVES, SECTIONS, COMB FDN., EXTRACTORS, &C. ITALIAN QUEENS, NUCLEI, &C. SEND FOR PRICE LIST.

P. L. VIALLON MFG. CO., BAYOU GOULA, LA.

Free! One untested queen Free, in June. Send for circular, and learn terms. Circular gives the best way to introduce queens, price of nucleus, etc. 1 untested 5-banded queen, in May, $1; 6 for $5. 7-8d Circular free.

J. F. MICHAEL, GERMAN, DARKE CO., OHIO.

Alley's Drone and Queen Trap.

A Reliable Self-Hiver. 100.000 in use.

Adjustable to any style hive without alteration of either hive or trap. Guaranteed to hive every swarm, or money refunded. Mailed at 65 cts. each. Or AM. APICULTURIST (including our queen-rearing number) one year, and trap, $1.00. Full directions with each trap.

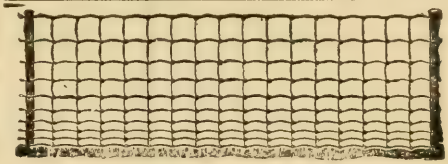
HENRY ALLEY, Wenham, Mass.

Please mention this paper.

Don't Monkey

your time away, but order your supplies early. Send for circular. Bees, Queens, Hives, Sections, etc., at lowest prices. 2tfdb

John Nebel & Son, High Hill, Mo.



An Odd Leap Year

Four won't go in 1893, but Page Fence will. And it's a leap year with us too. Sales for February leaped to three times the amount sold last year in same month. Nearly every mile went where it has been used for years. No mushroom growth here. 7d

PAGE WOVEN-WIRE FENCE CO., Adrian, Mich.

☞In responding to this advertisement mention GLEANINGS.

"FLORIDA."—500

LEATHER-BACK ITALIAN QUEENS.

500 young queens ready for delivery April 20 to May 10. Price $10.00 per dozen. Special prices on three dozen or more. Purity and safe arrival guaranteed. The 300 tested queens are all spoken for.

A. F. BROWN, Huntington, Putnam Co., Florida.

NOTICE TO FORMER PATRONS.

I have sold out my supply business to E. H. Trumper, of Bankers, Mich., to whom I commend my former patrons. I shall hereafter keep only a few supplies for my neighbors.

W. D. SOPER, Jackson, Mich.

Tested Italian Queens.

Ready April 1, at $1.25 each. Untested, ready April 25; at 65c each; ½-doz., $3.50, or 1 doz., $6.50. Golden Italians from imported mothers; ready, untested, May 1, at 75c each; ½-doz., $4.25, or 1 doz., $8.00. Safe arrival guaranteed. 7-8-9-10d

Stewart Bros., Sparta, Tenn.

Pansy Plants.

I have a large stock of superior plants at a very reasonable price. Can ship safely by mail or express to all parts of the country.

Send for FREE list of 20 of the choicest varieties in cultivation. 7d

J. F. Rosenfield,

Pansy Specialist. West Point, Neb.

Mention this paper.

Try Duval's Golden 5-Banded Bees.

That have given such general satisfaction. They are the best honey-gatherers, gentle, and not surpassed for beauty. Queens ready now at $1.25; 6 for $6.00. For full particulars and prices send for circular. C. D. DUVAL, SPENCERVILLE, MD.

Bees FOR SALE.—Fine stock—Langstroth frames—straight worker comb. Write for prices. 7-8d

H. LATHROP, BROWNTOWN, WIS.

Special Notices.

We are sold out of Parker Earle strawberry-plants.

CLOVER SEEDS.

We have had a very brisk trade in alsike clover seed, and can still supply it at the same prices, $10.00 per bushel; $5.10 for ½ bushel; $2.60 per peck; 22 cts. per lb. We can also supply alfalfa clover seed at $7.50 per bushel; $3.90 per ½ bushel; $2.00 per peck; 15 cts. per lb. We have a supply of sweet or Bokhara clover; also scarlet or German clover, at 18 cts. per lb.; 10 lbs., $1.50; 25 lbs. or more, 12 cts. per lb. Common red and peavine clovers are bringing about $10.00 a bushel as we go to press.

NO. 1 CREAM SECTIONS.

As we have quite a large stock of No. 1 cream sections, 4⅛x4¼x1⅞ and 1⅞, we will sell them, till further notice, at $2.00 per 1000, or 5000 for $9.00. These sections are just as nice as our best, in every respect, except color, and many of them are of so slight a cream tinge that it is hard to distinguish them from the white. We have in the past sent out much poorer sections for best when we could get no better than these No. 1 cream, and they are certainly a bargain at the above price.

COMB AND EXTRACTED HONEY.

Since our last issue we have sold out of comb honey entirely, so that, if any of our readers not too far away have any desirable lots still on hand looking for a market we should be pleased to hear from them, as we may have more orders for which we have no supply. We have secured about 1500 lbs. of very choice extracted honey in kegs of 100 to 200 lbs. Price 10⅜c per lb.; in 60-lb. cans, 11½; 10-lb. cans, 12c per lb. This seems high, but it is little more than it cost us, and choice honey is hard to obtain just now at any price.

SLICED SLOTTED SEPARATORS.

We are now making all our slotted separators by sawing them, because we believe them to be stronger and better made in that way, even if they do cost a little more. We have on hand several thousand slotted sliced separators, some of which became slightly discolored in drying. These are 4⅛x18 inches, for use with section-holders We have also a lot not discolored, the same width, 17 inches long, for use with slotted bottoms for four rows of sections, without blocks at the ends, or such an arrangement as our combined crate. We will furnish either, while they last, at 35c per 100; $3.00 per 1000, or half the price of the sawed ones.

OUR NEW CATALOGUE, SPRING EDITION.

We have had so many price lists and so much printing to do for other people during the past few months, that, notwithstanding we have had two or three extra printers, our own work has suffered much delay. We have been resetting our catalogue in new type, and making electrotypes to print from. We expected to have it all done, and a large edition ready to mail, by March 1st; but here it is April 1st, and it is not finished yet. We have sent to all our readers, ahead of this issue, a new price list, of which the middle 16 pages are printed from the old type. If all goes well we shall have the new plates ready for these pages within two weeks. There will be no material change in the matter or prices.

In the new price list we have added considerable new matter in the way of brief instructions, telling how to Italianize, rear queens, produce comb and extracted honey; transfer, and many other operations that beginners especially are interested in. Note, also, honey and wax extractors, which are rewritten. Counter-store matter has been condensed, and new miscellaneous matter of interest added in the last few pages.

AUGITE STOVE-MAT.

We gave you a rest on the stove-mat question in last issue; but the orders and kind words we receive do not abate any, but come, seemingly, with renewed vigor. The mats are still going out at the rate of about 5 gross a week, bringing smiles and contentment to many a home. Here is one of the testimonials in poetical form, just received:

Yes, the augite mat is a treasure,
We can praise it without measure;
We cooked rice on it to-day,
And we said, "Ah, it does pay."

Mary said rice does not stick,
And that is the trick.

She came at no slow pace,
And with a "smiling face,"
To show me the basin,
And surely 'twas amazin'.

I can say this much about it—
We could never do without it.
It is so very fine.
This is true, every line.

North Greenfield, Wis. MISS IDA SHELDON.

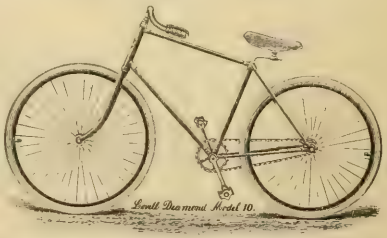
We have listed the mats with prices, page 49 of the catalogue, just sent out, so we will omit the prices here.

Here is another kind word, just received, which is a sample of many, showing how readily the stove-mat sells in the hands of agents who carry it from house to house, making known its merits.

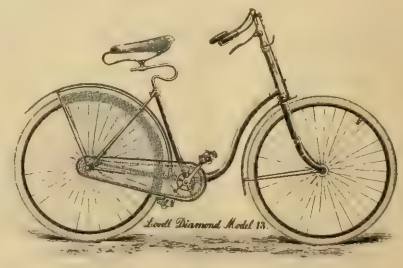
My goods (stove-mats) have come in good order. I have sold every one already. It is a very good article. I will send another order in a few days. If I do, please be prompt and send it without delay. I am selling different articles, but there is nothing that sells like this stove-mat. JOHN BRADLEY.
Hurley, Wis.

SAFETY BICYCLES.

So much has been said in GLEANINGS during the past few months in regard to riding the wheel that we naturally get a great many inquiries in regard to wheels. The number of different kinds of wheels upon the market is getting to be legion, and the number of agents for the various wheels still more numerous. We have decided that it will not add much to the throng if we enter the ranks. We come with a wheel that is tried and proven. The Lovell



Diamond Safety was one of the first to appear, and the manufacturers have each year kept pace with the march of improvement, and their 1893 models are surpassed in grace of appearance, lightness, and strength, by but very few if any of the high-priced wheels made.



The list price of these wheels is $115.00, and we shall be pleased to send a catalogue, with full particulars, on application, together with a special price that we are able to make, delivered at your nearest station. You can have your choice of the Columbia "hosepipe" tire or the Morgan & Wright "inner tube" pneumatic. We have a sample wheel here which we ride, and can recommend it unreservedly.

THICK AND DIVIDED TOP-FRAMES.

We have in stock some seventeen boxes, each containing 250 L. frames, with ordinary side and bottom bars ⅞x⅞, and with divided top-bars ⅞ in. deep, and 1 inch wide, or each piece ½ inch wide. In nailing up these frames it is the purpose to put a piece of foundation, either a starter or full sheet, between the two parts of bar, thus clamping it securely. We will close out these frames at $2.00 per box. For a smaller quantity, which would have to be repacked, $1.00 per 100.

THE NEW CRANE SMOKER.

This new and valuable implement has been perfected at last. Its advantages over all other smokers were so decided that we concluded months ago to manufacture and sell the same under royalty, and therefore applied to the inventor at once. Both ourselves and Mr. Crane have been busy experimenting on its construction ever since. We had hoped to offer it to the public before; but, desiring to get the instrument fully perfected, we have waited until now. It has been much improved; and it is the general testimony of experts who have examined it, that it furnishes the strongest blast and greatest volume of smoke, with the least effort of the bellows. It is so constructed that smoke can not get into the bellows; and so powerful is the blast, that, as Dr. Miller has recently expressed it, it would "blow the whole insides out" if the internal arrangements were constructed like other smokers. The fire-cup is lined on the inside with asbestos and sheet iron; so also is the nozzle. This, you will readily see, prevents both in a large measure from getting too hot to be handled, and also prevents the deposit of a superabundance of creosote on the inside. The nozzle is curved so as to send a stream at nearly right angles to the plane of the bellows, and the latter is reversed large end up. We have aimed to make this the very best smoker ever put upon the market, and in doing so we find that we are obliged to put the retail price at $2.00 by mail, postpaid, large size, 3½ inch. By freight or express with other goods, $1.75. Price in lots of 12, $14.00. Special prices to the trade will be furnished on application. Cuts and full description will appear in our next issue.

BUGGIES at ½ Price

CARTS & HARNESS

$90 Top Buggy..$37
$95 Phaeton.....$54
4 Pass. Top Surrey.$47
$50 Road Wagon $25
$16 Road Cart..$8.25
Buggy Harness$3.85
$10 Buggy " $4.75
$30 Team " $12.50
Morgan Saddle$1.65

We Cut the PRICES and outsell ALL competitors. Buy of factory and save Middleman's profit. Catalogue Free.

U. S. BUGGY & CART CO.
55 S. Lawrence St., Cincinnati, O.

IMPORTED QUEENS.

In May and June, each $2.00
In July and August, each..... 1.80
In September and October, each..... 1.60

Money must be sent in advance. Safe arrival guaranteed. Queens that die en route, if returned in the letter, will be replaced by mail, postpaid. No order for less than 8 queens *by express* will be accepted.

E. BIANCONCINI,
7-9-11d Bologna, Italy.

Please mention this paper.

Black and Hybrid Queens For Sale.

For the benefit of friends who have black or hybrid queens which they wish to dispose of, we will insert notices free of charge, as below. We do this because there is hardly value enough in these queens to pay for buying them up and keeping them in stock; and yet it is oftentimes quite an accommodation to those who can not afford higher-priced ones.

I have a few mismated, also a few hybrid queens; mismated, 35c; hybrids, 25c; most of them about 7 months old, and all good layers.
P. J. THOMAS, Fredonia, Kansas.

Wants or Exchange Department.

Notices will be inserted under this head at one-half our usual rates. All advertisements intended for this department must not exceed five lines, and you must SAY you want your adv't in this department, or we will not be responsible for errors. You can have the notice as many lines as you please; but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices offering articles for sale, can not be inserted under this head. For such our regular rates of 20 cts. a line will be charged, and they will be put with the regular advertisements. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange comb foundation and Japanese buckwheat, for beeswax. 6-7d
F. N. JOHNSON, Knoxville, Knox Co., Ill. Box 137.

WANTED.—To rent an apiary, or a position as an apiarist in California. Correspond with
CHAS. BROWN, Nicolaus, Sutter Co., Cal.

WANTED.—To exchange 2 story 8-frame tin-roof hives, with full sets of combs and queen-excluding zinc honey-boards, for books, Jersey calf, breech-loading shot-gun, Winchester rifle, revolver, or offers. 5-7d M. FRANK TABER, Salem, O.

WANTED.—To exchange eggs for hatching, for thin foundation, or all-in-one-piece sections. My stock of Light Brahmas, White P. Rocks, and Golden Wyandottes, are as good as the best. 5tfdb
D. F. LASHIER, Hooper, Broome Co., N. Y.

WANTED.—To exchange a strictly reliable incubator and brooder for Barnes foot-power saw, or to correspond with parties in need of incubators. Address ED. W. COLE, Manufacturer of the "Triumph" Incubators and Brooders, Kenton, O.

I AM the originator of the Single Comb Wyandottes. Great winter layers of large brown eggs. Eggs in exchange for bees in any hive, value $2.00 per setting. I have other things to exchange.
ALVIN A. VINAL, Mt. Blue, Mass.

WANTED.—To exchange a $75.00 fruit-evaporator, for a cornet in C, B flat, and A, or for a Safety bicycle, or good photographic lens.
J. B. MCCORMICK, Fredericksburg, Wayne Co., O.

WANTED.—To exchange B. P. R. eggs for hatching (Conger strain), for Italian queens.
C. R. WINTERROWD, Martinsville, Ill.

WANTED.—Foot-power lathe for metal, portable forge and anvil. Will exchange bees, queens, honey, or good bicycle. J. A. GREEN, Ottawa, Ill

WANTED.—A young man to work in apiary, and do farm work. Write, stating wages to
R. P. BONEAR, Cherry Ridge, Pa.

WANTED.—To exchange five Heddon hives, complete, for L. frames of comb, wax, or offers.
I. J. STRINGHAM, 105 Park Place, N. Y. City.

WANTED.—To exchange for offers, 49 tin racks or clamps, each holding six 2-lb. sections 5¼x6¼, with five T tin separators for each clamp.
J. H. CHASE, West Eaton, N. Y.

WANTED.—To exchange Columbia Safety bicycle, '91 pattern, in good condition, for beeswax or offers. WALTER S. POUDER, Indianapolis, Ind.

WILL exchange 12-in. Vandervort mill, tank, etc., for wax, foundation, or sections. Also have a 22 cal. Ballard rifle, new, and carpenter's jig-saw, to exchange, cheap. H. DWIGHT, Friendship, N. Y.

WANTED.—To exchange for something useful, 17 Vol's GLEANINGS, nice shape, twine bound, from first No. issued, Jan., 1873, to Jan., 1890. Also first 3 Vol's of the *Review*, '88, '89, and '90—20 Vol's.
JOHN W. MTRRAY, Excelsior, Minn.

WANTED.—To exchange our steel Wonder fence-machine, or Black Minorcas or Light Brahma eggs, for honey-extractor.
SHERMAN F. HANSON, Scranton, Iowa.

Globe Bee Veil

By Mail for One Dollar.

Five cross-bars are rivited in the centre at the top. These bend down and button to studs on a neck-band. The bars are best light spring steel. The neck-band is hard spring brass. The netting is white with face-piece of black to see through.

It is easily put together and folds compactly in a case 1x6x7 inches, the whole weighing but 5 ounces. It can be worn over an ordinary hat; fits any head; does not obstruct the vision, and can be worn in bed without discomfort. It is a boon to any one whom flies bother, mosquitos bite, or bees sting.

Send for my Illustrated Catalogue of Supplies for the Apiary. I give a present on all orders of ten dollars and over. The catalogue tells all about it. *T. G. NEWMAN,*

147 SO. WESTERN AV., CHICAGO.

FOR SALE

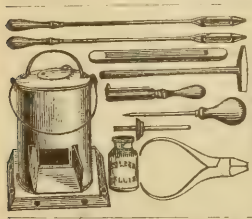
280 acres of timber land; cleared, 25; orchard, 10. Three never-failing springs; large barn; cellar 38x16, house enclosed. Good location for bees. Address MISS MARY A. WOOSTER, Van Buren, Ark.

BEE-KEEPERS' SUPPLIES. Before placing your order for supplies send for our illustrated catalog. We are making the best goods at lowest prices.

E. H. TRUMPER, Bankers, Mich.

OTTUMWA BEE-HIVE FACTORY.

Bee-keepers, look to your interests. Every thing in the line of bee-supplies constantly on hand. Price list free. **GREGORY BROS. & SON,**
1-23o Ottumwa, Ia. South side.



OATMAN'S SOLDERING AND REPAIR KIT

Consists of fire-pot, soldering irons solder, and soldering-fluid, with tools complete as shown in cut, with directions for soldering different metals, and how to keep your soldering-irons in shape. Whole kit, boxed, 12 lbs. Shipped on receipt of $2.00. Agents wanted.

O. & L. OATMAN,
8-7db **Medina, Ohio.**

TAKE NOTICE!

BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH,
14tfdb New London, Wis.

Please mention this paper.

Root's Goods AT ROOT'S PRICES can be had at Des Moines, Iowa. Address Jos. Nysewander.

"Quigley's Golden Queens"

are bred for business; try one. Circular of Queens and Bee Supplies ready Feb. 1st. Send for it, and a free sample copy of the

PROGRESSIVE BEE-KEEPER.

Address **E. F. QUIGLEY,**
2tfdb **Unionville, Mo.**

Please mention this paper.

BEE-HIVES AND SUPPLIES.

Send for catalogue free. Address **SAMUEL JONES,** Highland Park College, Des Moines, Iowa. 1-19db

Bee-Hives.

Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue. 23 2'db

W. H. PUTNAM, River Falls, Pierce Co., Wis.

PATENT WIRED COMB FOUNDATION
HAS NO SAG IN BROOD-FRAMES.
THIN FLAT - BOTTOM FOUNDATION
Has No Fish-bone in Surplus Honey.

Being the cleanest is usually worked the quickest of any Foundation made.

J. VAN DEUSEN & SONS,
Sole Manufacturers, 5tfd
Sprout Brook, Montgomery Co., N. Y.

Please mention this paper.

BEES QUEENS
SMOKERS, SECTIONS, COMB FOUNDATION
And all Apiarian Supplies cheap. Send for Catalogue.
E. T. Flanagan, Belleville, Ill.

SEND YOUR NAME and receive my price list of Queens, Nuclei, and Colonies. Address S. D. McLean, Columbia, Tenn.

ITALIAN QUEENS. Tested, $1.50; 6 for $7.50. Sent after Mar. 1st. Untested, $1.00; 6, $5.00; or $9.00 per 12. Sent after April 1st. Safe arrival guaranteed. Send for circular of Bees, Queens, Drones, Root's Foundation, Extractors, etc. 4tfdb

J. N. COLWICK, Norse, Bosque Co., Tex.

For new price list of *PURE ITALIAN BEES AND QUEENS, AND WHITE AND BROWN FERRETS, ADDRESS N. A. KNAPP, ROCHESTER, LORAIN CO., O.*

Please mention this paper. 4tfdb

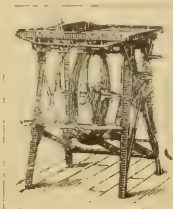
Muth's

Honey - Extractor.

Square Glass Honey-Jars,
Tin Buckets, Bee-hives.
Honey-Sections, &c., &c.
Perfection Cold-Blast Smokers.

APPLY TO
CHAS. F. MUTH & SON, Cincinnati, O.

Send 10-ct. stamp for "Practical Hints to Bee-keepers."
Please mention this paper.



Read what J. I. PARENT, of CHARLTON, N. Y., says—"We cut with one of your Combined Machines last winter 50 chaff hives with 7-inch cap, 100 honey-racks, 500 broad frames, 2,000 honey-boxes, and a great deal of other work. This winter we have doubled the amount of bee-hives, etc., to make, and we expect to do it all with this saw. It will do all you say it will." Catalogue and Price List free. Address W. F. & JOHN BARNES, 545 Ruby St., Rockford, Ill.

When more convenient, orders for Barnes' Foot-Power Machinery may be sent to me. A. I. ROOT.
23tfd

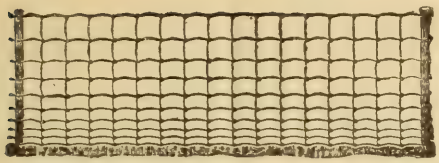
HATCH CHICKENS BY STEAM
WITH THE IMPROVED
EXCELSIOR INCUBATOR.

Lowest priced First class Hatcher made.

Thousands in Successful Operation. *SIMPLE, PERFECT, and SELF-REGULATING.* **Guaranteed to hatch a larger percentage of fertile eggs, at less cost, than any other Incubator.** Send 6c. for Illus. Catalog. Circulars Free.

GEO. H. STAHL, Pat. & Sole Mfr., Quincy, Ill.

☞ Please mention GLEANINGS. 22-9db



You are Shocked

when you unexpectedly come in contact with a solid body. Multiply the shock by weight and speed and you know how a running horse feels when he strikes a rigid wire fence. Barbs would have killed him, but Coiled Springs catch him like a bird alighting on a limber twig.

PAGE WOVEN-WIRE FENCE CO., Adrian, Mich.

☞In responding to this advertisement mention GLEANINGS.

Golden Queens From Texas.

My bees can not be surpassed for business, beauty, and gentleness. Safe arrival and satisfaction guaranteed. Untested queens—March, April, and May—$1 each. **50** fine Tested Queens for early orders. $1.50 each. Order early. Send for price list. 5-16db.

J. D. GIVENS, Box 3, Lebson, Tex.

HUNT'S FOUNDATION FACTORY.

Send for **Free Samples** of the **Finest Foundation** and **Sections** made. Special prices and advantages to dealers in Foundation. Send for my new illustrated **Free Price List** of every thing needed in the apiary. M. H. HUNT, Bell Branch, Mich.

2tfdb Please mention this paper.

Bees For Sale Cheap.

My bees having wintered in fine condition, as my old reliable strain of Italians always do, to reduce my stock I will sell 50 colonies at a low price.

Send for 44-page descriptive price list of Bees, Queens, and Supplies. The very best goods at the lowest possible price. 7-tfdb

WM. W. CARY, Colrain, Mass.

Please mention this paper.

Please mention this paper. 4-9db

CHENANGO VALLEY APIARY.

If you want beautiful Golden Italian Queens, or from Imported mothers, send in your orders early. Tested, in June, $1.50; untested, $1.00. Strawberry-plants of the latest and best varieties cheap. Send for circular. MRS. OLIVER COLE,

6tfdb Sherburne, Chenango Co., N. Y.

Martin's Prolific Buckwheat

Still continues to **outyield Japanese, largely,** under same conditions, here in Michigan. $1.25 per bushel, or 75 cts. per ½ bushel, sacks included, on board cars here. Address

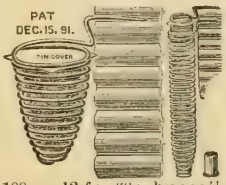
Wm. Martin, HIGHLAND, Oakland Co., Michigan.

GOLDEN ITALIANS.

My bees are large and great honey-gatherers. Untested queens, 80 cts.; 3 for $2.00. Warranted queens, $1.00; 3 for $2.50. Tested queens, $2.00. Select tested, $2.50. Satisfaction guaranteed, or money refunded. **C. M. HICKS, Hicksville, Wash Co., Md.**

Please mention this paper. 8-10-12d

CONTROL YOUR SWARMS.



N. D. West's Spiral Wire Queen-Cell Protectors will do it, and you can RE-QUEEN your apiary during the swarming season. Pronounced the best by such men as Capt. J. E. Hetherington, Cherry Valley, N. Y.; P. H. Elwood, Starkville, N. Y., and others. Cell-Protectors, $3.00 per 100, or 12 for 60c. by mail. Cages, $5.00 per 100, or 12 for $1.00, by mail. Samples of both, with circular explaining, 25 cts. The cages are used for hatching queens in any hive, and are the best Bee-Escape in use. Address 5-8db

N. D. WEST, Middleburgh, Schoharie Co., N. Y.

TELL you what, Jones, **Levering Bros.** sell the best goods and at the lowest price of any one I've struck yet. The largest and best equipped

Bee-Hive Factory

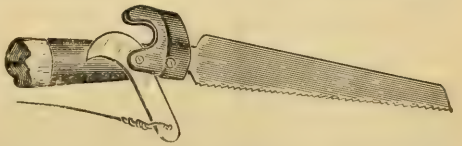
in the West. The Dovetailed Hive and New Hoffman self-spacing frame a specialty. Every thing used by practical bee-keepers at wholesale and retail. Send for their free Illustrated Price List, and save money. Supply Dealers, send for their Wholesale List. Address

LEVERING BROS.,

3-14db **Wiota, Cass Co., Iowa.**

Please mention this paper.

Smith's Pruner



Now is the time for pruning your fruit-trees, and this is the best tool you will find for doing it. You notice there is a knife, or shear, for small limbs, and a saw for large ones. The handle on which it is mounted is seven feet long, with a lever for operating the shear. They retail generally at $2.00. We will make an introduction price of $1.50 each, or $13.20 per dozen. Trees need pruning before spraying, and during this month and next is the best time to do it.

A. I. ROOT, MEDINA, OHIO.

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CIRCULARS RECEIVED.

The following parties have sent us catalogues of hives, apiarian supplies in general, bees, queens, etc. Free copies will be sent to applicants.

A. E. Manum, Bristol, Vt.
W. H. Laws, Lavaca, Ark.
J. Tomlinson, Allegan, Mich.
Henry Alley, Wenham, Mass.
W. H. Bright, Mazeppa, Minn.
O. P. Hyde, Lampasas, Texas.
O. H. Townsend, Alamo, Mich.
H. F. Hagen, Rocky Ford, Col.
S. Valentine, Hagerstown, Md.
J. H. Howard, Holme, England.
C. F. Muth & Son, Cincinnati, O.
E. H. Trumpers, Bankers, Mich.
Lowry Johnson, Masontown, Pa.
Page & Keith, New London, Wis.
W. P. Crossman, Ballinger, Texas.
J. D. Goodrich, East Hardwick, Vt.
Myers Brothers, Stratford, Ont., Can.
Geo. H. Kirkpatrick, Union City, Ind.
Gould, Shapley & Muir Co., Brantford, Ont., Can.

The following were printed at this office, and will be ready for distribution by the time this issue is mailed:

J. J. Hardy, Lavonia, Ga.
F. N. Johnson, Knoxville, Ill.
S. F. & I. Trego, Swedona, Ill.
W. H. Putnam, River Falls, Wis.
Clark A. Montague, Archie, Mich.
Mrs. J. N. Heater, Columbus, Neb.
J. H. & A. L. Boyden, Saline, Mich.
Leininger Brothers, Fort Jennings, O.
J. S. Smith, Chilliwack, British Columbia.

Special Notices.

COMB-FOUNDATION MACHINES.

Our foundation-mills still continue to go, both new and second-hand. We have here the following second-hand mills which we offer at the prices annexed:

One 6-inch hex., No. S, in fair order for surplus foundation. Price $9.00.

One 6-in. hex., No. Q, in fair order, old-style frame; for fdn. about 8 to 9 ft. per lb. Will do well for strips of light brood fdn., or rather, heavy surplus. Will sell for $8.00.

One 6-inch hex., No. R, nearly new, late style, for thin surplus. Will sell for $12.00.

One 10-inch, round cell, No. E, old-style frame; made some years ago, but used scarcely any, and in good order. Price $14.00.

One 9-inch Dunham mill for heavy brood fdn.; in good order; will sell for $9.00.

POTATOES TO PLANT.

We have just received from one of the best potato-growing districts in York State a carload of some of the best seed potatoes you ever saw. They were grown in a sandy soil, and were shipped in a refrigerator car, and so were not frozen, chilled, or bruised a particle. They are also clean, and free from scab. Our selection, we think, is five of the best varieties now before the American public: Early Ohio, Early Puritan, Beauty of Hebron, Monroe Seedling, and the Rural New-Yorker, the first mentioned being the earliest, and, in fact, the best *real early* potato we know of, and we have tried nearly all. The next follow, about in the order of earliness. For the good qualities of the above, see our seed catalogue, mailed on application. These potatoes are packed in brand-new strong barrels, each barrel holding 11 pecks. Price per barrel, $4.00; and if you do not want a whole barrel, you had better arrange with your neighbors to make up a barrel. If you take less than a barrel, there will have to be an extra charge for something to ship them in; therefore the price per bushel will be $1.75; per peck, 50 cts. If you want some extra-nice potatoes for table use, the above prices by the barrel are not very much more than some of you have to pay for common stock. In fact, the above are all excellent eating potatoes now, for we made a test of them so we could speak understandingly.

WIRE NETTING, SHORT ROLLS, ETC.

We submit below, corrected from last issue, a list of the short rolls and remnants of wire netting that we have just received from the factory. We still have a good supply of 2-inch No. 19 netting 4 feet high, which we still offer at these special prices: 1 roll, $3.60; 5 rolls, $17.50; 10 rolls, $34.00. This you notice is 10c a roll higher than our last offer on this size. We have the 3-inch Nos. 19 and 20, 60 and 72 inches wide only, other widths all sold. We have put the price on the following p eces at the same rate as full rolls, except on the 72 inch, on which we offer an extra 10% discount.

Of 2-inch mesh No. 19 wire, we have the following remnants and short rolls at ⅔c per square foot. The figures at the left give the width in inches, and the other figures give the length of each piece in feet. Multiply this by the width in feet, then take two-thirds of the result to find the price of each piece.

12 | 40, 52, 65, 75, 109, 117, 123, 130.
18 | 48, 50, 59.
24 | 8, 10, 21, 44, 48, 55, 59, 69, 75, 92, 93, 96, 97, 97, 114, 120, 128, 131, 143, 147.
30 | 15, 45, 50, 60, 62, 64, 70, 90, 91, 101, 107, 123, 137, 140, 144, 146.
36 | 9, 16, 18, 18, 19, 25, 26, 38, 40, 40, 40, 46, 49, 50, 50, 50, 53, 54, 55, 56, 58, 58, 64, 73, 73, 73, 74, 75, 82, 83, 84, 84, 87, 87, 90, 90, 92, 94, 96, 96, 96, 99, 100, 100, 100, 100, 100, 100, 100, 100, 102, 102, 102, 105, 105, 109, 110, 111, 114, 115, 116, 118, 120, 120, 122, 124, 124, 125, 125, 128, 129, 129, 130, 130, 138, 142, 142, 143, 143, 144, 144, 147, 147.
42 | 16, 20, 79, 109, 124, 131.
48 | 9, 10, 11, 12, 20, 20, 25, 29, 32, 35, 38, 40, 46, 48, 55, 55, 60, 60, 61, 64, 67, 68, 73, 75, 75, 75, 82, 83, 84, 86, 87, 90, 94, 96, 98, 98, 100, 100, 102, 103, 111, 119, 120, 122, 123, 123, 124, 130, 138, 138, 140, 140, 143, 144, 144, 144, 144, 145, 145, 145, 145, 146, 146.
54 | 72, 88, 88, 143.
60 | 45, 53, 71, 73, 73, 75, 78, 87, 96, 101, 101, 101, 105, 107, 110, 120, 123, 124, 138, 140, 144, 144, 146, 146.
72 | 16, 20, 20, 38, 40, 42, 42, 42, 45, 47, 48, 57, 62, 71, 73, 75, 75, 81, 82, 85, 85, 88, 88, 93, 100, 100, 100, 107, 110, 112, 119, 120, 123, 124, 125, 134, 142.

Of 2-inch No. 20 we have the following pieces at three-fifths of a cent per square foot. Arrive at the price in precisely the same way as above, taking three-fifths of the number of feet instead of two-thirds, to get the price in cents.

30 | 32, 39, 73, 105, 120, 140, 140, 140.
36 | 12, 20, 22, 36, 38, 39, 56, 57, 66, 68, 79, 81, 86, 88, 100, 100, 100, 110, 119, 120, 122, 126, 128, 128, 132, 134, 136, 138, 140, 141, 144, 145.
42 | 142, 143.
48 | 36, 41, 49, 55, 60, 66, 70, 75, 85, 86, 92, 98, 104, 105, 114, 123, 125, 140, 143, 145, 145.
54 | 145.
60 | 27, 44, 46, 48, 50, 51, 60, 73, 119, 139, 139.
72 | 25, 38, 44, 45, 70, 75, 76, 79, 100, 100, 128, 137, 139.

In lots of 5 pieces, any one or assorted kinds, deduct 5%; 10 pieces, 10%; 25 pieces or more, 15%. On the 72-inch netting you may also deduct 10% on single-piece orders; or, in addition to above, on quantity orders. First come, first served. Generally these pieces go off very rapidly, and it may be well to name a second or third choice in case your first may be gone.

Pure Barred Plymouth Rock Eggs

for setting, 15 for $1. Mrs. A. A. Simpson,
8-9-10d Swarts, Pa.

EGGS, $1.00 PER 13.

White P. Rocks, and White Wyandottes. A few fine Wyandotte cockerels for sale at $1.50 each.
6-9db **W. J. YOUNG, Scotch Ridge, Ohio.**

SELLING OUT! Chaff Hives, etc., very cheap. F. H. & E. H. DEWEY, 55 Mechanic St., Westfield, Mass. 8-12db

FOR SALE CHEAP, FOR CASH, Italian bees and Queens during 1893.
Address OTTO KLEINOW,
7-8-9d No. 118 Military Ave., Detroit, Mich.

HONEY COLUMN.

CITY MARKETS.

CHICAGO.—*Honey.*—Market is small in volume; but fine comb continues to sell at 17@18. The dark crates are practically neglected, it being difficult to effect a sale at 10 to 12 cts. Extracted continues to bring 6@9, according to quality, flavor, color, and style of package. Prime beeswax, 25c per lb. Those having honey should forward it at once, for after this month our market takes very little of it.

R. A. BURNETT Co.,
Apr. 8. 161 So. Water St., Chicago, Ill.

CINCINNATI.—*Honey.*—There is no change since our last. Trade is fair in extracted honey at 6@8c on arrival, according to quality. There is no choice comb honey on our market. Prices are nominal. We sell at 12@16 in the jobbing way. *Beeswax* is in fair demand at 24@27 for good to choice yellow on arrival.

CHAS. F. MUTH & SON,
April 8. Cincinnati, O.

CLEVELAND.—*Honey.*—White 1-lb. sections, 15. Our market for honey, at present, is fair. We should be glad to have you favor us with a shipment, and we will do well for you.

WILLIAMS BROS.,
April 8. 80 & 82 Broadway, Cleveland, O.

BUFFALO.—*Honey.*—Honey is moving very slowly at present. Fancy white, in light supply, is selling mostly at 17@18; choice stock, 15@16. Third grade is ranging from 12@14; dark, etc., 8@10. Prospects are that all honey will clean up at satisfactory prices.

BATTERSON & Co.,
April 8. Buffalo, N. Y.

ST. LOUIS.—*Honey.*—Market is very quiet—quotations unchanged. There is a great dearth of extracted honey. *Beeswax*, prime yellow, 25.

D. G. TUTT GRO. Co.,
April 10. St. Louis, Mo.

KANSAS CITY.—*Honey.*—Honey is about all closed out. We quote 1 lb. comb at 16; white extracted, 8; amber, 7.

HAMBLIN & BEARSS,
April 10. 514 Walnut St., Kansas City, Mo.

ALBANY.—*Honey.*—It is surprising where all the honey continues to come from. We have received quite a number of consignments during the past ten days, and it is selling off freely at 13@15 for clover and 10@11 for buckwheat. Extracted is selling slowly at 8@10.

CHAS. McCULLOCH & Co.,
April 10. 393-397 Broadway, Albany, N. Y.

DETROIT.—*Honey.*—Comb honey is selling in a small way at 13@14, and extra fine lot would bring 15. Extracted, 7½@8. *Beeswax*, 26@27.

M. H. HUNT,
April 10. Bell Branch, Mich.

NEW YORK.—*Honey.*—Comb honey is now pretty well cleaned up. There is some demand for white, and same would bring from 14@15c for fancy. Buckwheat, 9@10. Extracted is dull and the market well stocked with West India honey, which sells at from 68@75c per gallon. Beeswax scarce but firm at from 26@28c.

HILDRETH BROS. & SEGELKEN,
April 12. 28 & 30 West Broadway, N. Y.

BOSTON.—*Honey.*—No change in the honey market. We have no beeswax.

BLAKE & RIPLEY,
March 11. Boston, Mass.

KANSAS CITY.—*Honey.*—The demand for comb and extracted is quite light; supply equal to the demand. One-lb. comb, white, 12@17; dark, 10@15. Extracted, 6@8. *Beeswax*, 22@25.

CLEMONS-MASON COM. CO.,
April 10. Kansas City, Mo.

FOR SALE.—1500 lbs. very nice white-clover and basswood honey in barrels. Will take 7½ cts. per lb. for the whole of it delivered on board cars here, or 8 cts. by single barrel. Also 750 lbs. goldenrod honey, good quality and flavor, at 6½ cts. Samples sent on application.

GEO. W. CHAPMAN,
Millbury, Wood Co., Ohio.

BUFFALO, N. Y. Unsurpassed Honey Market. BATTERSON & CO. Responsible, Reliable, Commission Merchants. 18tfdb **and Prompt.**

Muth's Honey

In packages of ¼, ½, 1, and 5 lbs.,
25c. per lb.
If sent by mail, add 17c for every lb.

C. F. Muth & Son,
976-978 Centr. Ave.,
CINCINNATI, OHIO.

Caramels.

BUGGIES at ½ Price
CARTS & HARNESS
$90 Top Buggy..$37
$95 Phaeton.....$54
4 Pass. Top Surrey.$47
$50 Road Wagon $25
$16 Road Cart..$8.25
Buggy Harness$3.85
$10 Buggy " $4.75
$30 Team " $12.50
Morgan Saddle$1.65
We Cut the PRICES and outsell ALL competitors. Buy of factory and save Middleman's profit. Catalogue Free.
U. S. BUGGY & CART CO.
55 S. Lawrence St., Cincinnati, O.

7-10db Please mention GLEANINGS.

Our new patent nozzle-handle and bent smoke discharge to each of the *first fifty applying* bee-keepers who have either of our three-large sized smokers, to put them on. State where you saw notice, size of smoker, etc. All we ask in return is a private letter within ten days after receipt of improvements, stating whether you like or dislike either the handle or curve, and if any change in them would overcome the defect you point out. After the fifty names are registered and supplied our new circular will be sent instead of handle, etc.

BINGHAM PERFECT
BEE SMOKER
Pat'd 1878, 1882, & 1892.
Cheapest & Best on Earth.
Send Card for Circular to
Bingham & Hetherington
ABRONIA, MICH.

QUEENS WANTED.
Before May 10th, twenty to fifty off grades, black, hybrid, or other *cheap* queens. Quote prices at once. 8d R. C. AIKIN, Loveland, Colorado.

What Stood the Test?
Hilton's Improved Chaff Hives have for the past 15 years. Send for his free illustrated catalogue of every thing needed in the apiary, of
Best Quality and Lowest Prices.
One hundred colonies of Bees for sale. Write for prices, and address
GEO. E. HILTON, Fremont, Mich.
In responding to this advertisement mention GLEANINGS.

Oregon and Washington Bee-keepers

We have decided to give a

BIG DISCOUNT

for early orders. Write for special prices, naming quantity you can use.

POSSON'S SEED STORE,
Portland, Oregon.
6-9db

Dr. J. W. Crenshaw, Versailles, Ky.

Breeder of Italian Queens. Imported or home-bred mothers, as desired.

Untested, till July 1, $1.00; after July, 75c. Contracts solicited. **Dealer in A. I. Root's Supplies.** Grower of plants of every description. Onion Plants. Celery Plants. Send for circular. Mention GLEANINGS.
5-14 db

CONCORD GRAPEVINES.

Strong, thrifty Concord grapevines, for shading bee-hives, or for other purposes, 10 cts. each; 85 cts. for 10; $6.50 per 100. If sent by mail, add 5 cts. each extra. Those sent by mail are only one year old, for the larger ones would be too heavy. The others are *three years old*, and have extra strong large roots. If over 50 vines are wanted, they had better be shipped by freight. There is not a bit of risk in sending grapevines by freight, for they can be packed so as to keep safely a month, if need be, if they are ordered early in the spring.

Send orders to **DR. MARTIN,**
Rising Sun Nurseries, Mercersburg, Pa.
5-6-7-8d Please mention this paper.

---

5 BANDED QUEENS, 3 BANDED QUEENS, SUPPLIES of all KINDS.

Eggs for Hatching from B. Plymouth Rocks and Brown Leghorns. Discount on early orders. Catalogue free. **CHAS. H. THIES,**
5tfdb **Steeleville, Ill.**

Root's Goods for the West.
Address Jos. Nysewander, Des Moines, Ia.

For Cash, During May, June, and July, I offer untested pure Italian queens at $1 each, or 6 for $5; 12 for $9. Guarantee safe arrival.
Address **D. E. ALDERMAN,**
Clinton, Sampson Co., N. C.

Central Bee-Hive Factory

And Bee-keepers' Supply-house of Illinois. Write for Catalogue for 1893. Address
F. N. JOHNSON, P. O. Box 137,
8-13bd **Knoxville, Knox Co., Illinois.**

READY AGAIN!

With those nice Golden Queens, reared by Doolittle's method. Untested, March, April, and May, $1.00; 6 for $4.75; 12 for $8.50. June and later, 75c each; 6 for $4.00; 12 for $7.50. Tested, $1.50; select tested, $2.00; breeders, $2.50; best, $3.00. Safe arrival and satisfaction guaranteed. 5tfdb
J. B. CASE, Port Orange, Vol. Co., Fla.
☞In responding to this advertisement mention GLEANINGS.

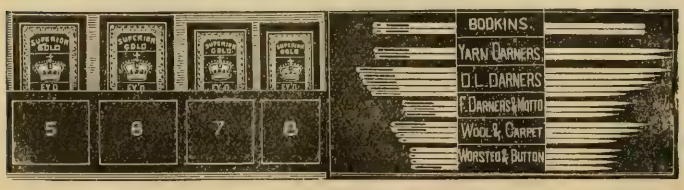
A large number of fine queens on hand; yellow and prolific; ready April 15th; warranted queens, $1; 6 for $4.50; select tested, yellow to the tips, suitable for breeders, each, $2. Reference, A. I. Root. 3tfdb
W. H. LAWS, Lavaca, Seb. Co., Ark.

FOR ALL KINDS OF BEE KEEPERS SUPPLIES.
ADDRESS LEAHY MFG. CO. HIGGINSVILLE, MO.
In writing advertisers please mention this paper 21tfdb

DOVETAILED HIVES, SIMPLICITY HIVES,
SECTIONS, EXTRACTORS, ETC.
A FULL LINE OF
BEE-KEEPERS' SUPPLIES.
60-PAGE CATALOGUE. 1tfdb

J. M. JENKINS, WETUMPKA, ALABAMA.
☞In responding to this advertisement mention GLEANINGS.

SUPERIOR GOLD-EYED NEEDLES.



Cut shows the contents of the package, half size. The bodkins, darners, etc., as shown, are, not gold-eyed,, but there are besides these, four papers of elliptic gold-eyed needles such as are usually sold at 10c a paper. Our price for the pkg. is 15c, 10 for $1.25, 100, $12. By mail 1c each extra.
A. I. Root, Medina, O.

PURE WYANDOTTE **EGGS** FOR HATCHING, $1.00 FOR 13.
Ref., A. I. Root. J. S. MASON, MEDINA, O.

FRIENDS,

I have a fine strain of Italian bees, and my apiary will be located six miles from other bees, so perfect mating of queens is assured. Will be pleased to receive your orders. Prices are as follows:

1 untested queen,	$1.00	6 untested queens,	$4 75
3 " "	2.75	12 " "	6 50

Tested queens, each, $1.50.
Safe arrival guaranteed. Address
FRANK H. HOWARD,
6-8-10d GARDEN CITY, KANSAS.
Please mention this paper

WE OFFER
COMB FOUNDATION
WHOLESALE AND RETAIL,
AT VERY LOW PRICES.
Satisfaction and all work guaranteed.

Price List and **samples** will be ready before the next issue.

Send for them.

Prices will range from 36 to 56 cents per lb., f. o. b.

BEESWAX WANTED. Write for prices.

W. J. FINCH, JR.,
931 E. Monroe St., **Springfield, Ill.**
☞In responding to this advertisement mention GLEANINGS.

Did You Know
That my 44-page Catalogue is now ready? I have the largest stock of Bee-keepers' Supplies in New England, at prices away down. My brand of XX White Thin Foundation, 12 feet to the lb., is the finest in the market (so say my customers). Just send a postal for samples and prices, before you forget it. Address
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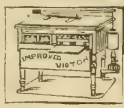

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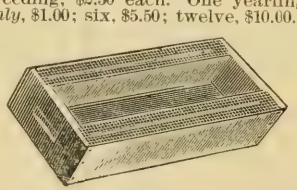

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The Review

for April contains a description of the "Largest House Apiary in the World, and its Successful Management," by H. P. Langdon (a most excellent article); B. Taylor shows how the cells in unfinished sections, left over from previous year, can be shortened, and the combs brought to a level as rapidly as the sections can be handled; Mr. R. C. Aikin points out the weakest point in bee-escapes—the spot where inventors need to use their brains some more; Mr. R. L. Taylor continues his "Timely Topics," (and they *are* timely); Mr. E. E. Hasty reviews the REVIEW this month; The Rambler gives one of his characteristic California articles; there is also a "reader" on "Extractors and Extracting," in which is illustrated an extractor in which the comb-baskets (four) can be reversed while the machine is running at full speed; in short, this number is not an exception to the manner in which the REVIEW is usually packed with bright ideas and valuable information. Send ten cents, and this number will be sent together with two other copies of different issues; or for $1.00 the REVIEW will be sent from January to the end of the year.

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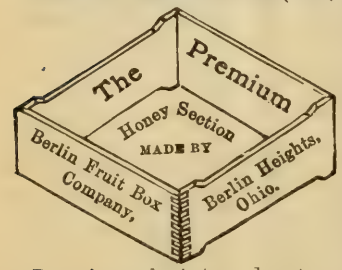

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Vol. XXI. APR. 15, 1893. No. 8.

STRAY STRAWS

FROM DR. C. C. MILLER.

SOFT-MAPLE bloom opened April 1.

PAGE 260 leaves the impression that J. A. Green is in favor of bicycles.

IF FLOUR of any kind is fed to bees, mix with it chaff, sawdust, or something to give the bees a foothold.

IN REPORTING failure or success with sealed covers, please say what covering, if any, was over the sealed covers.

THE LATEST USE for honey is to give a few drops, warmed, to canaries or other singing birds with drooping spirits.

THERE IS PROSPECT that H. Reepen, one of the German bee authorities, will be at the Chicago convention in October.

DON'T REPORT how well your bees have wintered till spring troubles are over. Springing is the hardest part of wintering.

WHICH IS MOST enjoyable—the anticipation of a big crop as the spring begins, or the "round-up" at the close of harvest?

TOOK BEES OUT of cellar April 4 and 5; 82.3 per cent alive, against 94 per cent 4 weeks earlier. A month later I can tell better how many winter through.

MARKET REPORTS show that the demand for best honey is beyond the supply, leaving the encouraging prospect that an empty market awaits the new crop.

SUGAR SYRUP is considered in this country as good as honey for spring feeding; but the best German bee-keepers insist that nothing can take the place of honey.

THE LIMIT of wholesale price for honey seems to be about 18 or 20 cents, as shown during the past scarce year. Honey is still a luxury. Will it ever become a staple?

A COMMON THING, in other countries, is to give with the name of a bee-keeper his occupation other than bee-keeping. Why not? It's always pleasant to know about such things.

JUST LET A. I. ROOT try selling me that song-book for 25 cts. (see p. 265). I'd brace myself to sing it all to him, and I'm sure he'd give me more than a quarter to stop before I got half through.

MRS. JENNIE ATCHLEY will be surprised some day to find herself a rich woman. She is reported in France as selling last season 2000 queens. Nothing new in that; but the report goes on to say that the price she got was from $2 to $5 each! Was that increase of price grown in France or America?

REV. W. F. CLARKE says, in *A. B. J.*, that the flavor is given to honey by the formic acid in the bees' poison. I always supposed that the flavor of buckwheat honey came from buckwheat posies.

THE BICYCLE, according to an editorial on p. 274, is as necessary for an out-apiary as an overcoat in winter. Now, honest Injun, would you advise an old codger like me to sell my horse and go to monkeying with a bike?

WHY IS IT that some people will use a second time a postage-stamp that happens not to be canceled, but would think it wrong to steal two cents? Or where's the difference between stealing a ride on a railroad and stealing the money to pay for the ride?

ALBINOS IN GENERAL are supposed to see better at night than in day time; so it is proposed by Reepen, that, in each apiary, half the bees be albinos to work at night, and half of the ordinary kind to work day time, thus doubling the force. Who says there's no Yankee invention in Germany?

ILLUSTRIERTE BIENENZEITUNG occupies more than two pages with a report of the Michigan convention, in which Prof. Cook is reported as supporting Heddon's adulteration views. Will Bro. Gravenhorst please take notice that Prof. Cook was entirely misunderstood? Prof. Cook does *not* favor adulteration.

SEALED COVERS. J. P. Smith reports in *A. B. J.*, that part of his hives had Hill's device with 7 to 10 inch cushions, and part had sealed covers with 4 or 5 inches of dry material over. Result was about the same. C. F. Muth insists on the importance of having a dry and warm cover *over* sealed covers.

"MR. C. H. DIBBERN recommends placing bees, that have not had a flight for two or three months, in a room warmed up to a temperature of 50°. It will be sure death, Bro. D., to all the bees so treated."—*Apiculturist.* I don't know about a room, but it doesn't seem to hurt mine to go up to 50° or 60° in a cellar.

CRAZY BEES. C. Reynolds reports, in *A. B. J.*, an unusual occurrence. A wet horse-blanket that had been used to wrap around ice was hung about 12 feet from a colony of pure Italians, out of their line of flight. It was, in a short time, covered with bees sticking fast by their stings, while thousands more were trying to get at it.

Layens found by experiment that very old bees in queenless colonies not only *store* no honey, but gather nothing for their own subsistence, while other colonies are storing briskly. I have always supposed that, as long as a bee was able to fly, it would work if it could. Is Layen's observation exceptional, or is that the general rule?

Meal feeding in spring is valued by some and opposed by others. If your bees can get plenty of natural pollen they'll not work on any substitute; and if there is nice weather for bees to fly, and not enough natural pollen to be found, I believe it's a good thing to offer them a substitute. The fun of seeing them work on it is something.

"A change of pasture is good for cattle," is an old proverb; and now we are told that the same thing applies to bees, as proven by those who practice migratory bee-keeping. One writer gravely recommends those who have not the opportunity, to change the location of their bees throughout the season, to give them a ride on a wheelbarrow, to sharpen their energy. It would at least sharpen the appetite of the man between the handles.

LANGSTROTH'S REMINISCENCES.

THE INVENTION OF THE COMB-GUIDE.

One great difficulty which I had to encounter in introducing the movable frames was, to induce the bees to confine each comb to a separate frame. About a hundred years ago the Abbe Della Rocca, in order to have the combs properly built on the bars which he used in one of his hives, had small pieces of worker comb supported by a fixture which could be inserted in the hive, and removed when these guides were attached by the bees. Huber improved upon this crude idea considerably, but fell far short of Golding's simple plan of dipping the upper part of his guides in melted wax.

From the first invention of my frames I was desirous of securing straight combs, without resorting to the use of these pieces of worker comb. Under date of Nov. 24th, 1852, I find this suggestion in my private journal: "*Guide-combs.*—If none can be had, hive bees in, say, 24 hours; remove their frames; such as are right may be replaced; the combs of the others may be cut off and put in a proper position." This extract will explain, better than any thing else, how much I must have been troubled to get what worker comb I needed.

TRIANGULAR COMB-GUIDE.

Extract from my journal, Feb. 12, 1853: "Let triangular pieces be fastened to frames to serve instead of guide-combs. The equilateral triangles (not shown in print) show the ends which come against the side-strips; these may be inch on their top, or smaller, as experience shall determine . . . I feel a strong persuasion that these will dispense with all guide-combs."

Little did I think, when I made this record, how much expense and trouble I should incur from this invention. To narrate at length my experience with it would require many pages. This I shall not attempt, but yet it entered too largely into my history to be passed by with only a brief notice.

I had a number of frames furnished with these guides, and waited with great impatience for the time when I could submit them to the decision of the bees. At last a swarm issued, was hived for a test, and allowed to remain undisturbed for several days. I had met with so many failures that I tried to prepare myself for another. Opening the hive and lifting out a frame I could scarcely believe my own eyes when I saw that the bees had accepted the sharp edge as the true direction in which to build their comb. I lifted out another and another, and saw the same thing, with irrepressible delight. Yes! my comb-guide was indeed a success. But one swallow does not make a summer, and I afterward found out that, in a few cases, the bees built their combs without any regard to the guides, so as to make it impossible to remove them without cutting. If that first swarm had done so, and I had accepted the device as a failure, it would have been, humanly speaking, a very fortunate result for me.

After using this guide for two seasons I thought so well of it that I tried to patent it. My application was rejected on the ground of a rejected application in the files of the office, showing the same device. On paying the expense for a copy I found that some one had invented what he thought would be an excellent plan for destroying the larvæ of the bee-moth by placing a series of triangular strips on the bottom-board of the hive, the sharp edges pointing up, as mine pointed down. He alleged that, upon these sharp edges, the clumsy worms would be fatally injured as they fell from the combs! It is not strange that, for some time, I thought the examiner was trifling with me, for at first I could see no conceivable connection between triangular strips placed on the bottom-board of a hive for maiming worms, and my use of the same for securing straight combs. At last I came to the conclusion that the examiner did not know that bees build their combs from the top of the hive downward, and that he saw no reason why they would not build them upward upon these bottom strips as well as on mine. I succeeded at last in convincing him that there was no interference.

Next in order, the office informs me of another interference; and on paying for a copy, I find in the drawings certain strips not terminating in a sharp edge, but beveled, so as to leave their bottoms about ¼ inch wide. No claim was made for these strips, and not a word was said about them. They simply appeared in the drawings. More correspondence ensued; and at last, when I confine my claim to a sharp edge, the interference is no longer alleged against it.

I was now looking confidently for a patent, until notified of another interference. A party had applied for a patent on the very same device; and on sending for a copy I learned that a claim was made for my sharp-edged guide, when applied to the sides and bottom as well as the top of the frames. This application came from one whom I had appointed as an agent for the sale of my hive, and to whom hives with my guides had been sent. Both parties are now notified to prepare testimony as to priority of invention; but my former agent refused to contest his claim against mine, and the interference was dissolved.*

This matter being settled, instead of the expected patent I receive notice of another interference, a party having applied for a patent on the same device, to be used on the bars or slats of a hive. This proved to be a much more serious matter than the others, as testimony had to be taken by each party before a notary public. On hearing the testimony on the other side,

* I had already experimented with the guides for the side and bottom strips of the frame, and discarded this use of them. Put on the bottom one, instead of fastening the comb to the sharp edge, the bees, to utilize all the space they could, often carried it outside the true direction, leaving only the usual bee-space between it and the bottom-board.

I had no reason to question the honesty of my opponent or his priority in the use of the sharp-edged guide. Taking for granted that the patent would issue to him, I entered into negotiations to purchase the control of it. The proper papers were prepared, and I made him a visit to complete the business; but just before our papers were signed, he was informed that, if he sold his invention to me, a mortgage upon his property would be foreclosed. As soon as I learned this, I at once released him from his promised agreement, although he said he was still willing to sign it. I returned home with a heavy heart indeed, for, as matters then looked, the control of that comb-guide by some one else would prove a very serious injury to me.

While in this state of anxiety, instead of receiving notice that the case had gone against me, my lawyer in Washington telegraphed me that he had found a "way of protecting my interests." It seems that the Commissioner of Patents had told him that he had decided to issue the patent to the other party, when, just as he had left him, he met the late Mr. R. C. Otis, whom he knew to have purchased a large interest in my invention. Informing him of the adverse decision, Mr. Otis, to his great surprise, told him that he had just come from Missouri, where he had seen this very guide in actual use by a bee-keeper who had probably invented it before either of the other claimants. The commissioner was immediately informed of this new phase of the case, and consented to suspend the issue of any patent until further testimony could be taken. By the advice of my lawyer, Mr. Otis returned to Missouri and made an agreement that the new claimant should apply for a patent, which, if granted, should be sold to us for a certain sum. The application was made, and all the parties duly notified of this new interference. All now seemed to be plain sailing. If the Missouri man could prove his right to the patent, it would come under our control; and even if he had publicly used it too long for any patent to be granted, it would be free to all. Before the new issue was passed upon, the commissioner refused to grant a patent to any one, on the ground that the device had been anticipated in a printed publication.

L. L. LANGSTROTH.

THE TRUTH ABOUT BEE-ESCAPES.

THE VARIOUS BEE-ESCAPES COMPARED, AND THE PRINCIPLES UPON WHICH THEY WORK; A CAREFULLY CONSIDERED ARTICLE BY C. H. DIBBERN.

Noticing what Mr. H. Alley says, and your comments thereon, on page 173, I am reminded that the general principles of bee-escapes are not fully understood, and have never been thoroughly explained. It is true, that it is generally known that, in order to get the thing to work, we must have an escape-board, with an escape in that will allow bees to pass out readily, but permit none to get back. But just why it is that bees want to get out under certain conditions and not under others, is still a good deal of a mystery. During the past three years I have experimented more with bee-escapes perhaps than any other one man, and I think I can cast some light on the subject.

In the first place, it is the escape-board that furnishes the inducement for the bees to *desire* to leave the supers, or, rather, to find their queen and brood. There is no attraction about the escape itself, as in the case of the fly-trap. Place an escape-board, without any escape or hole in it, under a super ready to take off, and the bees will soon become greatly excited, and will pour out of a small knot-hole to the outside, if no other exit is found. Now, if the super had been separated from the main hive by a single thickness of wire cloth, no particular excitement would ensue, and, of course, no bee-escape would work. Now, in case the queen or young brood is present in the super, little excitement will be noticeable, and the bees will only partially vacate, perhaps knowing that they have the means for continuing their existence indefinitely. It would seem that, in case where bees are separated from queen and brood by wire cloth only, they are able to keep up communication, and do not seem to realize that they are really separated. This is, perhaps, the reason why some of the earlier escapes, made of wire cloth, did not prove very successful. The escape-board is nothing very new, as it was used with the old Reese escape, and was also a feature of escapes patented in 1885 and 1860.

Now, as we have the cause in the escape-board, the next step is the escape itself, and the principles involved. There are, perhaps, three classes or kinds of escapes now in general use; viz., those using springs, like the Porter and Hastings; those using pendants, like Demaree's and my Little Giant; and those using only shutes, without any obstructions, like the Larrabee and new Dibbern. All these escapes, however, have some features in common. The first is the well, or place into which the bees pass after dropping through the hole or inlet, to escape. When bees find themselves in this small place, apparently cut off from both super and hive, they lose little time in getting to either one place or the other. As the hole through which they have passed is directly overhead, with edges projecting downward, they do not seem to find their way back very readily, and become more excited. In this condition they will readily pass through between springs, raise pendants, or pass long distances through shutes. Now, if the entrance were by perpendicular walls, without the overhead holes, bees would not pass through even such delicate springs as in the Porter, but, after feeling the obstruction, would generally return to the super. It will thus be seen that the well is an important point.

Another feature of similarity is, that all the escapes under consideration are placed horizontally in the board, all of which were present in my original escape, described Nov. 15, 1889, in the *American Bee Journal*, and after which all others have been patterned. It was Mr. Demaree who said, in regard to my invention, that bees would not pass long distances alone in the dark. That is quite true, and is just the principle on which my shute theory depends. Under *ordinary circumstances* bees will not pass long distances alone through narrow passages, neither will they pass through springs or pendants. After the bees get into the well they are no longer under ordinary circumstances, and, to rejoin their companions, will travel long distances, or pass through obstructions. The fact that they will not ordinarily do so is the main reason why they do not return through my shute escape, where no obstructions prevent them.

It is not an easy matter to fairly test bee-escapes, as hives under apparently the same conditions will vary greatly, even with the same kind of escape. I have several times put the super on again, and made another test, in a day or two, with varying results. I have tried all the well-known escapes, including some of my own that have never been published; and where escapes work at all, there is little or no difference as to the time required for clearing supers. During the last few years it has been

my aim to produce an escape that should be more rapid than any now known; but while I have half a dozen patterns that will work as rapidly as any, I can not fairly say that they will do more. I have tried escapes with one inlet and four outlets, and *vice versa*, but one is no better than another, in that respect. The cut of the Hastings, with a chance for four bees escaping at once, with but one inlet, looks very nice; but it is no more rapid than the Porter, where a single bee seems to be examining the springs. I believe, however, that, where one is in a hurry to have supers cleared, to put from two to four escapes in a board is a decided gain. This is my conclusion after making many trials.

There is one other point I want to make clear; and that is, the distance required to make my shute principle a success. As I have shown, when bees are isolated by getting into the well, they will travel any distance to regain the hive bees; but no such large escapes are necessary. When I first discovered that the principle would work successfully I was using a sort of double honey-board the full size of hive. I then commenced to cut down the size of the proposed escape, all the while making tests. I have now reduced the size to 1½ x 5 inches, with not less than three shutes, or gates. Such an escape is as simple and as rapid as any escape now known. If a less distance or fewer gates are used, the bees will pass back through it, and, of course, it fails to work.

I long ago tried some such devices as Mr. H. Alley describes — holes punched through tin. Sometimes they work all right, and sometimes they don't. If Mr. Alley thinks it is not the jagged edges that keep the bees from returning, let him try round smooth holes. Drones in supers will effectually stop up such escapes. I have also tried his honey-board theory, but found it "no good." C. H. Dibbern.

Milan, Ill., March 28.

[Well, friend Dibbern, we believe you are the doctor on this question. You have experimented so carefully along these lines that your conclusion of the whole matter is doubtless pretty nearly correct.]

CUTTING COMB FOUNDATION.

HOW DOOLITTLE DOES IT.

I am requested to tell in Gleanings how I cut comb foundation, and what I use on the knife to prevent the foundation, or wax, from sticking to it. The writer says he is bothered with the wax sticking to the knife, to such an extent that the foundation is torn rather than cut. In cutting foundation I have a wide board which I use on purpose for this business, on one side of which are screwed strips half an inch thick, which are for the purpose of stops to keep the foundation from sliding on the board. These strips have notches in them half an inch wide by one inch deep, so spaced that they come just where the knife will run into them in cutting the foundation; and a pin is set in one end for the gauge-board to strike against, so that no time is lost in measuring. This gauge-board is made by nailing strips of the right length, in pairs, each pair being set a thirty-second of an inch apart, for the knife to run in, and the pairs nailed to suitable cleats, to make the whole thing rigid and strong. In nailing to the cleats, the pairs are spaced so that, when the knife is put in them, it will cut the foundation to the desired width, when it is ready to be cut the right length by using another gauge-board fixed for that length. If the notches in the strip screwed to the wide board are not in the right place for this lengthwise cutting, change for a strip that has right notches. Having both boards ready, put from five to eight sheets of foundation on the board, bringing it up against the strips, and even with the pin; put on the gauge-board, and draw the knife between each pair of guides, thus cutting the foundation in the right place, and perfectly true, the same as a saw works in a miter-box. In using the gauge-board, the left hand holds it down firmly, but not hard enough to make the foundation stick together. This keeps either the gauge or the foundation from slipping. For the knife I prefer an old table-knife, such as our grandmothers used—one that has been worn till it is very thin, when the edge is made very sharp on an oil-stone.

How to prevent the wax sticking to it was a problem on which I worked a long time. I was told to heat it, by some; others advised the use of honey, weak lye, etc., all of which did not work to please me. Moistening the knife with kerosene worked the best of any of these, and this plan was used till one day when I was in a great hurry I drew the knife through the foundation as quickly as possible, when, lo and behold! the whole sticking matter was solved; for the friction caused by the rapid motion of the knife through the wax melted it to a sufficient extent so it did not stick to the knife at all. To be sure I was right, I quickly drew the knife to the middle of the pile and stopped, allowing a few seconds to pass before I tried to go on again, when I found the knife was fast and could not be moved, except by tearing the foundation. This may be old to others; but as I have never seen it in print I here give it to those who are fussing with honey, lye, etc.; and, if like me, they will appreciate bothering with those no longer. Eight sheets of thin foundation, or five of thick, are about all that can be cut with one stroke of the knife handily. Where the thin comes in narrow strips, several piles eight sheets deep can be put on the board at once.

POSTAGE ON QUEENS TO AUSTRALIA.

Friend Root, I think you are quite right about the postage on queen-bees to Australia, on page 186; but the words, "We can now send queens more cheaply to Australia than we can to a little town four miles distant from Medina," may be misleading to some, and cause trouble if the postal rulings are not fully understood. As I understand the matter, we have to pay two cents postage on any thing sent to Australia, as samples of merchandise, no matter if the package does not weigh more than one-fourth of an ounce; while only two cents are required for a package weighing four ounces. If the weight is above four ounces, then we have to pay one cent for each extra two ounces or fraction thereof, up to the limit of weight, which is, as you say, eight and three-fourths ounces; thus the postage on a package coming up to the full limit would be five cents. If you were to send a queen to a little town four miles from Medina, you would undoubtedly use the small Benton cage, weighing an ounce or less, and on this you would put a one-cent stamp, according to U. S. laws; but if the same cage were started for Australia it would require two cents. I thought a little explanation of this matter would help all who might be thinking of sending queens to the Old World.

THE GOVERNMENT LIQUOR-BUSINESS.

I read with considerable interest what the editor said on page 222, relative to "Government Distilleries." I note that "government distilleries are out of *Uncle Samuel's* line of business;" but instead of that they appear to be right in line with *his business*, for he receives 90 cents on every gallon of whisky dis-

tilled before he will let it go. Again, friend Root wants to know how that distillery, which looks so beautiful to him, came in his adjoining county. I think I can tell him. A little over thirty years ago we were in the throes of a civil war. Uncle Samuel needed funds, and the whisky interests, known as "Gambrinus," told him he would furnish the funds if Uncle Samuel would give him a mortgage on his boys. Uncle Samuel agreed, and, as a result, we see the government receiving 90 cents on every gallon of whisky turned out of these distilleries, and $25 from every saloon-keeper in the land, Gambrinus ruining from 60,000 to 100,000 of the boys of the country each year as his part of the contract. Thus our government, this Christian government, nationalized the drink business, and inaugurated a system of partnership with the accursed liquor-traffic, and handed down to us as legitimate the 250,000 licensed saloons and distilleries which exist to-day. All of these are right square in the way of God's kingdom advancing as it should in the world. Therefore, whoever would preach Christ Jesus (see page 809 of GLEANINGS for 1892) must necessarily preach against this greatest opposer of his kingdom, and use all of his powers in opposition to this stronghold of Satan.

Borodino, N. Y., Apr. 1. G. M. DOOLITTLE.

NEW ARTIFICIAL COMB.

PROGRESS THAT HAS BEEN MADE IN GERMANY.

The invention of comb foundation marked an era in bee-keeping. Aside from any other consideration, the bees were thereby saved the time of making comb, and the honey used to secrete the wax. Then efforts were made to do something toward saving what was still left for the bees to do. Wax was given to them in small shavings, to induce them to work it into comb; but although some success was reported, the scheme was in general abandoned. Something was done in the way of high side walls in foundation, but still much wax must be added by the bees before the cells were of normal depth. Then there were reports from time to time that we were to have actual comb made. Arrangements were just about completed, and the thing was just about to be accomplished. But the full accomplishment seemed always just a little further in the future, and seemed to be a veritable "will-o'-the-wisp," so that most gave up looking for it.

Now, however, comes to the front in the land of Dzierzon, Pastor Warnstorf, and says he can make comb with cells full depth. He not only says he can do it, but he does it; not only a little solitary specimen, but pound after pound of it, and so beautifully made that it will readily pass for that made by the bees.

One way of making foundation is to dip sheets of wax and then run the sheets through a pair of rolls. Another way is to have a press with an upper and an under plate fitting accurately together, each plate being an exact imprint of the foundation to be made. Melted wax is poured upon the under plate, the upper plate pressed down upon it, and the accommodating wax assumes the proper form.

Now, what is to hinder having the molds in one of these foundation-presses make cells half an inch deep? All that is necessary is to have the interstices of the mold, which form the side walls of the foundation, of sufficient depth. That is a matter easy of accomplishment; but the trouble is, that, when the side-walls pass a certain point as to depth, when the two plates or molds are separated there is no way of getting the deep side walls away from the press without breaking; at least, there was no way discovered till Pastor Warnstorf struck it, and therein consists his invention.

Suppose a mold made with interstices so deep that it will allow side walls 1⅞ inches deep. This will really be a series of hexagonal prisms, each one ending in a pyramid with three faces. Now let a comb be made with cells 1⅞ inches deep, and suppose that, in some way, we have it detached from the mold. We don't care to have cells more than half an inch deep, so we will slice off 1⅜ inches of the comb, carefully preserving without injury what we slice off. This will give us a comb with side walls 1⅜ inches deep, but with no bottom to the cells. Now, suppose we have the power to change this from wax to brass, or, what is the same thing, make an exact imitation of brass, having a solid margin to it.

Without going minutely into details, I think it will not be very difficult now to understand the mode of operation. Although comb with cells on both sides can be made, it is much easier to have cells on only one side, and on some accounts it is considered better. So the lower mold is only the ordinary kind, as for making foundation. The upper mold, with its 1⅞-inch prisms, first passes through the brass grating spoken of; then the wax, being poured upon the lower mold, the press does its work and the upper plate is again raised, and the brass grating pushes down the comb. Instead of trying to pull the comb off, as in previous attempts, it is pushed off and comes away uninjured.

So far the size of the combs does not exceed 6 or 8 inches square; but when pieces are put together in a frame, the bees readily fasten them together. Two combs can be put together back to back, thus making the ordinary comb with cells on each side. Or, if room enough is left, the bees will build out cells on the foundation side, the same as on any foundation. Neither of these ways, however, is considered so good as to put two combs together, back to back, but with just room enough for bees to pass comfortably between them.

It is claimed that these combs are better than the natural combs made by the bees, especially during the main harvest. The bees will store honey in them readily, but no brood will ever be found in them, no matter where placed in the hive. The unilateral comb is considered better than that with cells on both sides, because, if the bees are allowed to draw out cells on the second side, brood may be put in it, and also because, if cells are on only one side there will be no need to reverse the combs in the extractor. By proper management the bees can be induced to prolong the cells to any desirable depth. The artificial comb is kindly received by the bees at any time, whilst foundation is at times torn down by them.

Thus I have given the advantages of the new comb, as claimed by its friends. It is only fair to say, that the new comer does not find all clear sailing, with no opposition. Indeed, its opponents seem rather more numerous than its friends; at least, more of them seem to speak out. Wide interest is, however, awakened, and no doubt it will be thoroughly tested during the coming season. C. C. MILLER.

Marengo, Ill., March 27.

[It seems to us that Pastor Warnstorf's comb is a good deal of the "will-o'-the-wisp" yet. The pieces are small, and cells on one side only. Mr. E. B. Weed, of Detroit, accomplished as much, and yet we know that it ended only in failure. This attempt on the part of the Germans is, however, interesting, and we would not try to stand in the way of progress. If it has merit it will come out on top; if not, it will

speedily go the way of all other attempts at artificial comb.]

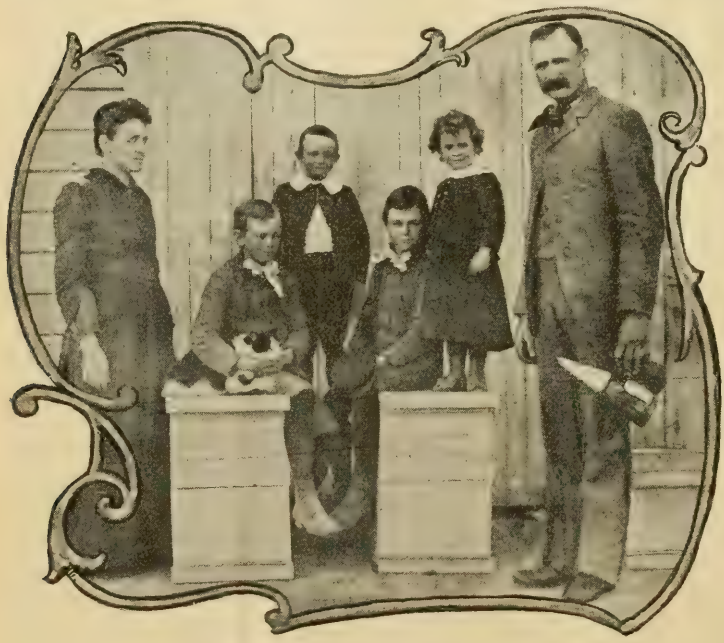
RAMBLE NO. 82.

THE FERGUSON BROTHERS.

Almost two miles west from San Bernardino, and nearly half way between that city and Colton, the traveler encounters the Colton Terrace, a slight elevation of land caused by the washing away of the land east of it by the Lytle Creek. One bright warm day in January, when the meadow-larks were caroling, and when our Eastern friends were enjoying one of their oft-repeated blizzards, the Rambler measured ties from San Bernardino, along the Santa Fe R. R., until the terrace was gained.

The object of my visit was to find the residence of Mr. Geo. Ferguson, a noted bee-keeper of San Bernardino Co. With him was stopping my friend Wilder, who had written me that my presence would cause tears of joy to flow. A quail, and a horned toad stuffed with cotton and arsenic, were awaiting me as a present, chiefly for the rectitude of my intentions. These considerations being so delightful, I was happy to find the terrace and the residence of Mr. Ferguson. The house is near the railroad, and around it is a thriving young orange grove, and in its immediate vicinity a grove of tall eucalyptus-trees. The terrace has enough elevation to give a fine view of the valley to the east. Close to us is the town of San Bernardino, one of the oldest towns in Southern California, and, though not so beautiful in my eyes as Riverside, it is quite an enterprising town. Eight miles beyond, upon land that rises in terraces, we see the young and remarkably thriving town of Redlands. Immediately back of Redlands, and partly encircling it, the San Bernardino Mountains rise in their grandeur, their various peaks glistening with snowy caps. Far to the right, and isolated from the rest, is the San Jacinto Mountain, also snow-clad at this season. All along at the north of our range of vision the mountains are nearer to us; and the Cajon Pass, Devil Canyon, and the Arrowhead hot springs are pointed out to the interested observer.

There are many grand pictures thrown upon the retina of the eye in this valley, that the tourist becomes enthusiastic over, and ever remembers with pleasure. It is with pleasure that the Rambler points to Old Grayback, the highest of the mountains, and modestly remarks, "Well, sir, I have planted my feet upon that highest point." It is in the midst of this awe-inspiring scenery that Mr. Ferguson has his pleasant home. Mr. F. seems outwardly to be happily situated. The chains of matrimony seem, however, to bind him to home and the home duties; and that all of our readers may see the nature of the chain, I obtained a photo of the outfit, the parents at the ends and the links between. The links are four very bright and well-behaved boys who will, ere long, help more or less in the apiary.



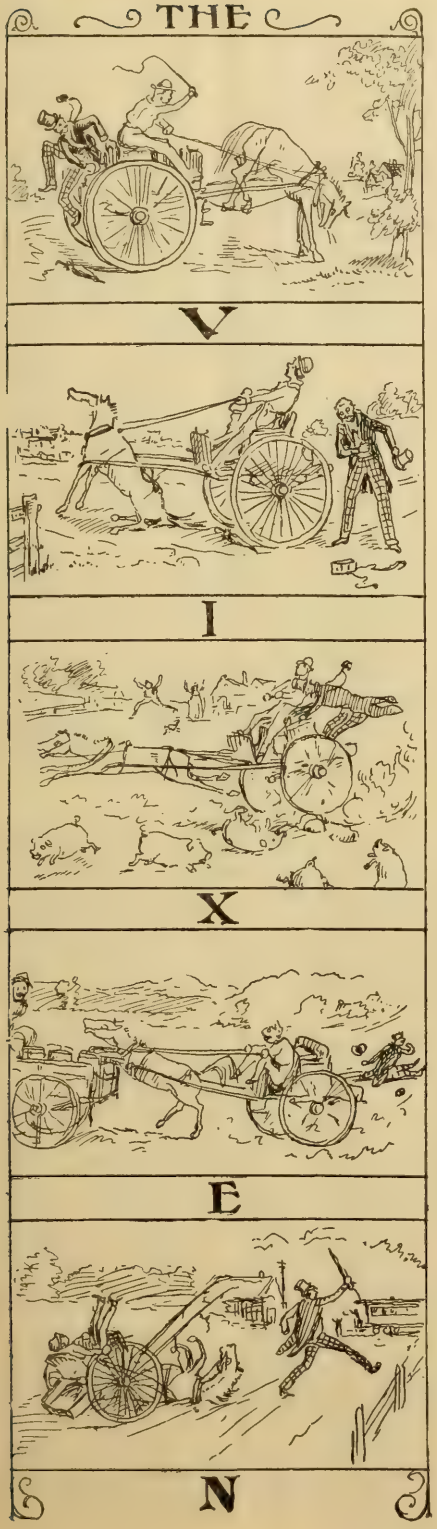
MR. FERGUSON IN CHAINS.

Mr. Ferguson is a bee-keeper of about 18 years' experience, and now owns about 400 colonies in two apiaries, located some miles from the home ranch, up what is termed Lytle Creek Wash. The Ferguson brothers, George and Samuel, worked their apiaries together for some years, but now own them separately. Samuel F., mentioned in a previous ramble, works his apiary upon the independent bachelor plan. He can "holler" and sing around his ranch, stomp the dust off his feet, hang his coat on any nail he pleases, sweep the floor or make his bed once a week, wash the dishes after he gets a good pile ready to make a worthy job of it, and there's no femininity around to make everlasting objections. Like all bachelors, Samuel is perfectly happy.

The Ferguson brothers are exceptional men, for nearly every person we meet in this country has previously been a resident of some eastern State or foreign country; but they are native-born Californians, their parents having arrived in the Golden State in the early pioneer days.

The hives used in these apiaries are a modified Simplicity, and worked for extracted honey. Mr. Ferguson's success has been marked by some great yields of honey; and, again, the scales have turned the other way, and the yields have been light. Taking the seasons as they average, Mr. F. has averaged a thousand dollars a year for the past ten years, which, with the chains that bind him, ought to make him happy, and which he seems to be.

Mr. F. has never been troubled much with fruit-men, and has not been ruined with the inroads of foul brood. Learning that a neighbor, Mr. Rouse, near Colton, two miles away, had a bad case of it, the 17-year-old colts were at-



tached to the wagon, and we were soon at the seat of war, and war it was, sure enough. Mr. Rouse, an old-time bee-keeper from the East, is one of those men who believe in no half-way measures, and he was making thorough work with his apiary. Out of 90 colonies he found almost 40 suffering with the disease. It was introduced to his apiary by purchasing bees in Harbison hives. His remedy was starvation, and rendering the combs into wax, boiling, stewing, and roasting the hives. I found Mr. Rouse also a married man, and his wife was upon the field of action attending to the boiling process. The hives and frames were thoroughly steamed for five or ten minutes, and then placed out to dry. When I saw how nicely the lady performed her part, and heard her remark that she loved to work with the blessed bees, I began to conclude there were some redeeming things in favor of matrimony; but my conscience soon seared over again, and I am happy to say I am still a free bachelor.

We asked Mr. Rouse to show us his worst case. He had one infected colony left, and we found them very docile, needing no smoke to control them. This was the first case I had ever seen, and I found the smell all that the highest authorities claimed for it, and none of the other signs were lacking. Mr. Rouse wanted to find a foul-brood inspector, but we had to tell him that San Bernardino Co. had none. The last board of supervisors would not appoint one because a member or two of the board were no friends of the bee, and remarked that they wished every swarm in the county had foul brood, and that it would be fatal. Better things are, however, hoped for the county soon. Foul brood, though a terror to bee-keepers, is not so virulent here as in the Eastern States. Very good yields of honey have been obtained from apiaries thus infected, during the first stages of the disease.

Mr. Rouse and his worthy spouse had our hearty sympathy, and we are confident their labors to eradicate the disease will be crowned with success.

Upon our return to Mr. Ferguson's we found Mr. Wilder had secured jack-rabbits enough for our dinners, which we duly enjoyed. Besides hunting quail and rabbits, our friend has pony Vixen lessons on the road-cart. Vixen had been used to the saddle for eight years, and the road-cart was a new-fangled machine to which she had decided objections. My friend, desiring to show me how nicely he had trained her to cart ideas, agreed to get me to the depot in time for the train. Our journey of two miles was full of exciting events. She first objected to leaving her pleasant surroundings, by performing a series of buckings. This failing to dislodge the cart, she sat down, with a very comical expression on her face. We got started, though, and the driving of Jehu was no comparison to our gait. The first obstacle in our way was a slow-moving load of rocks on the streets of San Bernardino. She failed to get over it at a bound, and, with an expression of disgust, she sprawled herself out flat on the ground. As it was near train time, I hastened away and left our friend in the midst of an admiring crowd, getting his Vixen (rightly named) on her feet again. On the whole, my trip was very interesting; and that it will also be so in a measure to your readers is the wish of the

RAMBLER.

[Only those who have had experience with the mustang can appreciate the series of situations shown by our artist, opposite. We have been just there ourselves. Indeed, our experience in runaways, and handling mustangs, turned us so completely toward the bicycle as a

better and more satisfactory means of travel, that we are for ever "agin" the horse. "Oh, yes!" some of you will say; "but *our* horse does not behave in that way." Very likely; but *we* never saw a horse with enough "git up and dust" but that was inclined to either buck or be a little fractious at times. A gentle sort of horse that anybody can drive, and that will carry you over the ground at a good rate of speed, is a very rare animal. Except, perhaps, during the few hours of learning, the bicycle never behaves itself unseemly. Really, if we were in Rambler's place (and every rambler ought to have one) we would have a bicycle. We would climb mountains and coast 'em—in fact, go almost everywhere a mustang could travel, with a "heap" more comfort; and we would have things all *our* own way too.

N. B.—The bicycle is also well adapted for *bachelors*.]

THE METZGER THEORY.

DR. MILLER EXPLAINS IT.

The theory advanced by Mr. Metzger, rather as an established fact than as a theory, has been the theme of much discussion across the water. In brief, the theory is that the spermatheca is not merely a receptacle for storing and giving as needed the spermatozoa, but a gland in which new spermatozoa are produced as needed. By some the theory is hailed as a great discovery. Some, jealous for the reputation of Dzierzon, oppose the new theory, on the ground that it comes in conflict with the theory of parthenogenesis. Others find no conflict between the two theories, the Metzger theory being considered only a step farther in the same direction as Dzierzon's. Still others, and among them names of great weight, consider the whole thing as a baseless fabric. In reply to the argument that there is not room enough in the spermatheca for the storage of a sufficient number of spermatozoa to last through the life of a queen, Prof. Leuckart replies that there is sufficient room for thirty millions.

In support of the new theory, Dzierzon is quoted as saying that an Italian queen mated with a black drone, in several cases that had come under his observation, produced at first black, yellow, and mixed workers, but later in life produced only pure Italians. Schœnfeld adroitly turns this argument against the Metzger theory. He first says, that, if this were universally true, in order to have pure queens no attention need be paid to the mating, but only keep a queen daughter of a purely mated mother till old enough, and you would have a queen practically purely mated. But taking that only by way of parenthesis, it must be remembered that the new theory does not allow that the spermatozoa would live in the spermatheca till the queen had reached old age, and that only half a million of spermatozoa could find room in the spermatheca. As ten spermatozoa, or about that number, are used up for each egg impregnated, the half-million received from the drone would be used up in six or eight weeks, so at that time pure workers should appear instead of waiting till the queen became old.

Herr Reepen gives a heavy blow to the new theory by recalling a case in which Dœnhoff crushed a part of the abdomen of a queen, and after that she laid drone eggs only. Dissection showed that the passage from the spermatheca was destroyed, hence nothing could pass from the spermatheca to the egg. But according to the new theory, as drone and worker eggs are both impregnated from the spermatheca, these eggs, instead of producing drones, should not have hatched at all.

According to present appearances, the prospect of long life for the new theory is not of the most flattering kind.

THE NEW ARTIFICIAL COMB.

As an objection to the use of comb completely built out, one thing is mentioned that would perhaps be heartily approved by Doolittle, Hutchinson, and others. It is, that the vigorous building of comb in the hive is needed as an incentive to active work in the field. Indeed, this is strongly emphasized by more than one, and the source from which this opposition comes makes it worthy of consideration.

One writer goes so far as to say, that, if bees are prevented from secreting wax, in time the character of the bees will be changed sufficiently to show plainly deterioration, and this may occur within even two or three years. All this may, perhaps, lead to experiments and observations that may be of value in helping to establish the truth on whichever side it lies. Indeed, it may not be necessary to institute any new experiments, but to bring into play observations that have already been made, having a direct bearing on the subject in hand. It seems somewhat reasonable that active operations in the hive might incite to greater diligence in the field. In the face of that, however, stands the oft-confirmed observation, that, where no combs are needed to be built, the field work is greatest; in other words, that the yield of extracted honey runs away beyond that of comb. And if deterioration results from the suppression of comb-building, ought not some of those who have for years run for extracted honey only, be able to tell us whether any great harm had come to those colonies which continuously had been prevented from secreting wax?

DETERMINATION OF SEX.

What it is that determines that one egg shall produce a drone when laid in a drone-cell, and that another, laid in a worker-cell, shall be impregnated so as to bring forth a worker, has been the subject of some speculation and discussion. Some have held that the will of the queen was in control, and Quincy has been handled somewhat roughly for suggesting that compression of the queen's body was in some way effective. Without pretending that any thing could be positively proven in the case, I have contended that there was as much proof for the compression theory as the will theory. Lately Mrs. Atchley gave, in the *American Bee Journal*, a report of an occurrence observed by her that she thought effectually settled the compression theory. A queen laid several eggs while standing on Mrs. A.'s hand, and these eggs were placed in cells. Some of them were protected, and hatched out, and in every case a worker was produced. And yet it is just possible that some particular position of the body might be assumed in occupying a drone-cell that would be different from that of a queen in a worker-cell, in such way that the position on the hand might be classed with that in the worker-cell.

H. Reepen, in *Centralblatt*, advances the argument that *Apis dorsata* has only one kind of comb, drones and workers being produced in cells of the same size. I can't see any possible reply to that argument. Indeed, I think I must entirely decline further allegiance to the compression theory. But I am not ready to swear allegiance to the will theory. Like Mr. Reepen and others, I think it will be more wise to say it's one of the things "I don't know."

Marengo, Ill. C. C. Miller.

[The greatest obstacle we see in the way of artificial comb (and we speak from a manufacturer's and shipper's point of view) is that, on account of its great bulk in comparison with foundation, it would hardly be within the reach of most bee-keepets. Foundation is, in a sense, artificial comb in the *flat*, which, on being put into the hives, is built out, in many cases, in a few hours, and what more could we ask for? Sheets of foundation would take only about a tenth of the box room of the artificial comb, to say nothing of the extra cost of boxes; and on account of the bulkiness of the comb, if it went by freight it would have to go at probably four times first-class freight. If it were shipped at all it would have to go by express; and the margins (or, rather, profits) on the sale of honey will not warrant such great expense. Aside from this, the comb would have to be packed very carefully, and even then it would be quite likely to be damaged in shipment.]

KEEPING DOWN INCREASE.

HOW TO LET THE BEES SWARM, AND KEEP THEM ALL IN ONE COLONY, AND AT WORK IN THE SECTIONS THE WHOLE SEASON.

When a colony swarms, I generally have one crate of sections or more on it; but if I do not, I take one from some other hive, or one with the sections with full combs in them. I now set the old hive off the stand and put on another hive-body on the old bottom-board, with five brood-frames in it, with starters in them spaced only 1⅜ from center to center, and fill up the space with dummies. I next put on my queen-excluding honey-board, and then the crate of sections from the old hive, after which a half-depth body; over this is placed another honey-board, and, last of all, the old hive on top of the whole. I now run in my swarm that will show box honey if there is a good flow of honey. I next bore a one-inch auger-hole in the old hive, on the opposite end from the entrance below, so the young queen, when she comes out to mate, won't go in at the bottom entrance where the old queen is and get lost. Seven days after the hive swarms I take out the top brood-frames and pinch off all the queen-cells but the best one. Ten days after the colony has swarmed I remove two dummies in the bottom hive and put in two brood-frames with starters in them in the center. In seven days from this I take out the other two dummies and add the other three frames with starters, placing them in the center as before. As soon as the young queen begins to lay I take the old one out and put the young one in her place in the bottom hive. The old queen I sell, kill, or make a nucleus with. I thus get a young queen every year. Moreover, in 17 days from the time my hive swarmed I have ten new frames in the bottom body, and all worker combs if I have a good queen in the hive to start with. If they build a little drone comb I cut it out and put in worker.

If I had all the combs I wanted I take the combs from the top story to add to the bottom body, simply using the top for a nucleus to raise the young queen in.

The reason I think most bee-keepers failed in this plan was, they left five brood-frames in the hive till the end of the season, and took all the honey they could get in the sections, and then were disappointed because there was so small a swarm of bees left, and no honey to speak of to winter on; and then they had to be fed, and the swarm was not strong enough to winter. My way is different from any other I ever heard of, and it works better than any plan I ever tried, because it keeps the swarms big and strong all the time. CALVIN C. PHELPS.

East Windsor Hill, Ct., March 10.

THE "SMILERY."

THE DELIGHTFUL EXPERIENCES OF A BEGINNER DELIGHTFULLY TOLD.

Mr. Editor:—You may give me a corner in the Smilery, if you please. My application for this exalted sphere is based, not upon a big honey-flow which inducts so many into the mysteries of the Smilery, but upon my successful manipulation of the foundation comb you sent me. The process was so simple, and the comb so flexible and accommodating, that it almost jumped into place without giving me a chance to exercise my skill, which had been so laboriously acquired by studying the illustration, which tips the frame up this way and then turns it down that way, pushes it and pulls it and presses it, tips it and turns it and tightens it, then runs the imbedding-machine over it. Well, it is all right, Mr. Editor, to be precise, and we could not get along without precision; but every thing seems so simple about the process now, since I have caught on, and this, too, after I had studied the directions until my head turned around like an old-fashioned fanning-mill, I can not help giving vent to a little flippancy, even at my own expense. I hope a smiling Providence may pursue the man who invented that successful little machine, made out of a stick, and a nail with a little notch in the end of it. It works with so much "felicity" that I had the comb nearly sawed in two before I could stop it.

I have 15 or 18 swarms of bees prospectively. I say "prospectively," because I have bought some which have not been delivered, and intend to buy some more. I have them of all colors, sizes, and shapes—black, brown, yellow, and some are inclined to be white. My hives correspond very well with the different races of bees, only more so. I have some in boxes which stand on the end, while others hug the ground longitudinally. I have one in a log, one in a tree, one in a candy-bucket, and one in a beer-keg. A man living a mile from here has one in a nail-keg, which I am going to try to buy; and when they swarm I want to get one into a salt-barrel, and then I shall be fixed. Would you transfer them or not? J. J. TEMPLE.

Lewisville, Tex., Mar. 28.

[Yes, assuredly.]

THE PAST SEASON IN AUSTRALIA.

HOFFMAN FRAMES RAPIDLY HANDLED, ETC.

The honey-flow generally in this colony has been very good; some of us lost the first part of the season through wet weather; others have had an almost continuous flow from July last until now, and it is likely to continue until June next (midwinter). The winter in and around here (the Hunter River Valley) is hardly cold enough to prevent bees flying every day the year round. I fancy I hear some one say, "What a glorious country!" It has its drawbacks, as there is no rest for the bee-keeper. Our spotted gum (of the eucalyptus family) will probably give us a good winter flow. We have swarming according to flow, from the middle of August to the middle of March. The bees never have a rest. Imported queens *may* stop laying for a week or two, but colonial-bred queens never do so if the bees can get out and bring in a little nectar. This applies to the Hunter Valley and northern rivers.

The eight-frame hive is taking fairly well, also the Root-Hoffman frame. Our larger honey-producers predict that they will not last long; but from experience I had this season with about 40 hives, single, double, and triple story, I find I can handle them faster and easier than any other frame I have tried; viz., Simplicity loose frames, and Heddon's closed-end frames and hives.

Our father sails for Europe by the Massilia, March 18, and will return via 'Frisco, visiting, *en route*, New York, Chicago, and other principal cities of the United States, and will make a special point of calling at Medina to see Root's big bee-hive manufactory. He will, of course, keep his eyes open to learn any thing he can in the way of short cuts, etc., to be applied here in the manufactory of R. L. Pender. He will be able to give you a general idea of our continent and its honey resources much better than by my writing. Father is the proprietor of Drumfin apiary. This apiary won the national prize last year for the best-managed apiary in the colony, of under 100 hives and not less than 30. The Drumfin Poultry-farm won the national prize the previous year for the best-managed poultry-farm in the colony. In connection with the apiary and poultry, an orchard is cultivated, and pure-bred Ayrshire cattle are bred. These have won numerous prizes at our agricultural shows, beating those bred by our leading cattle-breeders.

HOT DAYS IN AUSTRALIA.

I often see reference in Gleanings to the heat of the sun troubling some of our California bee-keepers. In our Hunter River district I find a good hot summer day is the best to handle bees—a day when the thermometer runs between 120° to 130° F. in the sun. This is about our fairly hot days, and it is during such weather that honey comes in. Solar wax-extractors are being more used; but one like the Doolittle does not suit very well. We require one that is flat, as our sun is nearly vertical. I find a tinned wire sieve placed over a tin tray, and placed in a box with a glass lid, very good. The wax melts on the wire, and runs through and is much out of the direct rays of the sun, which has a tendency to bleach the wax too white. About 50 per cent of the wax that finds its way to our market is nearly white. We find white wax rather hard and brittle for foundation, so we have to melt it up with some very dark yellow wax to toughen it. The price of wax is about 18 cts. per lb. for the best, and 14 cts. for inferior. Honey runs from 6 to 8 cts. per lb. Most of it is sold to dealers.

W. S. Pender.

West Maitland, N. S. W., Feb. 16.

[We shall be very glad to see your father at the Home of the Honey-bees, and will endeavor to give him the attention he deserves.]

GLUCOSE MIXTURES ON THE PACIFIC COAST.

"RAG SYRUP," ETC.

As the people of the Pacific coast are victimized with glucose at almost every turn and in almost every form, I am highly pleased to see Gleanings making such a decided protest against forcing glucose upon the people—mixtures that pass under a multitude of high-sounding names. As sweets have always been high as to price on this coast (with the single exception of extracted honey in large quantities), the "glucose fiend" has had a large field, and altogether too much favor, for he puts the vile stuff in packages under all kinds of pretty labels, and sends it forth as "Drips" and "Syrups," changing its front name as often as the people discover that they do not like it, or mixing it with some article of food, very soon spoiling the sale of whatever it is mixed with.

In the mines I have seen cans that contained the simon-pure glucose. I don't think it was even colored. This the miners had paid one dollar a gallon for, and had not used half a pint out of the can, but had set it aside as "no good"—it made them sick, just as E. R. R. says it did him when he tasted it.

During my sixteen years on this coast, I have "rastled" with glucose (as the boys say) under many disguises, but have never been able to get it down. It is nauseating every time; and even if chemists in high authority do say that it is not harmful as a food, I take the homeopathic ground that any thing that is nauseating is not desirable, either as food or medicine.

I remember one rainy day, years ago, in a mining camp, hearing an old miner telling how the "drips" were made. He said in large cities these drip-factories send out men and boys to pick up all the old clothes, old boots, shoes, and rubbers, they could find; then they were all ground up and put into a large hopper, the same as the old settlers used to make lye in; then a chemical solution was poured over the pulp, and the result was the drips, "same as you've got in that can, pardner."

"But," said a listener, "what gives that tang to the stuff?"

"Oh!" says the narrator, "there is now and then an old cigar-stub or clay pipe left in the pockets of the old clothes, and that does for flavoring;" after that, "rag syrup" came to be a common name for glucose in the mines, and many believed that it was made in some such way.

We have just found the persistent visitor again at our house, in the New Orleans molasses. This is too bad, for it has shattered our last idol; for how can a New England Yankee cook or even live happy without his New Orleans molasses? The glucose spoils it for every purpose.

We have tried the glucose mixtures in the culinary department (unwillingly) many times during our sixteen years' sojourn in California, but it has been a failure every time. Now, if glucose is good for any thing at all, can it be spoiled by mixing it with other sweets that are good? I think not.

Now, I will make this proposition: If glucose is desirable as a food, let us have it straight. Put it on the market for just what it is; and instead of selling it as New Orleans molasses or pure "strained honey," at from one dollar to a dollar and a quarter a gallon, let the people have it at its real value, which, I understand, is about ten or twelve cents a gallon. Then if people can find a place for it in the economy of the household, let them buy it; but don't spoil the market for something that is wanted, by adulterating it with the nauseating stuff.

A. B. Mellen.

Acton, Cal., Mar. 23.

[If glucose has any legitimate and honest use, we should like to know it. We hope the day will come when its manufacture will be prohibited.

We presume that, of course, no intelligent thinking person, including our correspondent, will credit the rag-pulp story. Human nature at times is bad enough; indeed, it would not be above making and selling rag syrup for pure goods; but there are other ingredients that are cheaper than rags, and, of course, would be used instead.]

JAKE SMITH'S LETTERS.

MY NU APERY HELP, AND HOW IT SKIPT OUT.

MR *A. I. Gleenings—deer Sir:*—Did you ever was reel bizzy a workin at yure bees, and 1 of yure gals cum out an toled you they was a lady wanted to see you? And then you diddent see how you cood leeve the bees jist then, but you diddent want to be impalite, and you diddent know but it mite be 1 of yure relations that you set a good eel of store by, whitch she had cum to supprise you, and then you went in and found a young gal that wanted to sell you the life & deth of Calico-eye the queen of Hayweigheye. And then you bot it to save time, and felt cheep when yure wife cast up to you that you was soft.

1 day last summer I was a hivin a swarm, & hed got them down on to a sheet when they all riz and settled on to the top of a oak-tree. Jist then 1 of the gals hollered to me they was a gentleman in the house to see me. It was a risky peace of bizness to go off and leeve that swarm in the yumer they was in, but I hed to go.

I went to the house and got off my riggin and slickt myself up sum, the gals all the time a snickerin to theirselves kind a quiet like, but I thot I woodent yumer em by askin no questions. I made up my mind it was Gordus Tull, him whitch married my wife's next oldest sister Anny frum Nebrasky. Gordus is 1 of the best fellows ever was, & Ide be glad to see him enny time, and I thot they hed him in the parler like he was a strainger, jist to supprise me.

THIS IS "THAT PICKTER."

Well, I opened the parler door, & I tell you I *was* supprised. You wood a been supprised too, woodent you? Jist look at that pickter, and see if you woodent. I thot, "If that's Gordus, he has changed sum." But it wuzzent Gordus, for he's of the cockcashun or white race, and this 1 was jist as black as a hive full of 25 year old cobm. His feetyours wuzzent what you mite call small, leastways not his mouth and feet. Look at the subdood meekness of his countenants. It was the subdoodest meekness I ever see. He hed a carpet bag that lookt very fool, but the way he handled it afterward it must a been fool of straw.

He toled me how his name was Rev. George Washington Augustus Jones, and he represented the grate cullured youniversity of sum place, I disremember what; and he hed heer tell how liberl I wus, and he hed cum to giv me the preshus privalege of hevvin my name handed down the annuals of time as one of the foundlings of the grate youniversity.

I toled him how they was a swarm on to the top of a tree, and wood he excuse me for a short period of time. He replide he wood be grately delitened to accumpenny me. So he cuvered up his cork-scroo curls with his stove-pipe hat, and took his carpet-bag and went along, sayin, "It will efford me plesher to render you all the resistance I can to the extent of my debility." He ment he wood help me.

So I let him help me, and when I clum the tree and sawed off the lim he held the hive under to ketch the bees. The lim cum down with a jerk, the Rev. George Washington Augustus Joneses hat cum off, and the bees lit all over his kinky head. He dropt the hive, grabbed his grip in 1 hand his hat in the uthther, and fit the bees for a minnit with each, then started like a streek; & the last I see of him he was makin a windmill of his self with both hands. I hevvent saw him sints, and ime afeerd I woont be handed down the annuals of time.

JAKE SMITH.

CALIFORNIA.

IS THE SMOKER UNHEALTHFUL?

In the course of a busy day a bee-keeper is obliged to inhale more or less of the smoke he directs from his smoker upon his bees. I said *obliged*, but this is hardly so. More truly I should have said that he can not help taking into his lungs much of the smoke that issues from the smoker while he is at work among the bees. To most persons this smoke is quite disagreeable; to some it is sickening. In my own case I find that, though it does not make me sick, still it is apt to be the means of bringing on a cold of greater or less severity. Just to what extent it affects other persons I am not fully prepared to state. I know, however, that it gives most persons a "cold in the head." Why this is so, I am sure those bee-keepers who belong to the medical profession can tell us. It would be well for all those who are thus troubled to be careful in the use of their smokers; they can, if they will, direct the blast so that the smoke will not be blown in their faces; at least, only a small portion of it will be inhaled by the operator.

PROPOLIS GALORE.

There is no place in California where the bees gather and use so much propolis as in the region opposite San Francisco. Why this is so I do not know, unless it is because it is "before the city." If this is so, the bees must understand Greek; for "before the city" is English, you know, for *propolis*. The place I mentioned where propolis is so plentiful is in the Oakland and Berkeley hills, opposite the Golden Gate and the Pacific metropolis. I have seen hives so badly glued with this natural product that the interior was almost coated on with a thick layer of this disagreeable stuff. It is mostly obtained from the alder and the balm-of-gilead.

RAMBLER OUTDONE.

While in Los Angeles early in February last, four bee-keepers, from as many counties in the

State, rambled about the streets of the Southern California metropolis one wet night until they brought up at the building of the Y. M. C. A. One of them proposed that the interior of the fine building be inspected by the quartette. The motion prevailed, and M. H. Mendleson, J. H. Martin (Rambler), W. W. Bliss, and the writer were shown about the various well-appointed rooms by the obliging secretary. We saw many interesting things; we managed to get the Rambler into several scrapes, but we will be charitable enough for the present not to give give him away too severely.

There is one thing I must tell, however; and that is, the fun we had with the lung-tester in the gymnasium of the institution. We all knew what a hard blower Rambler was, from seeing his work in "Gleanings." We therefore expected to see him do his level best to raise the roof off the Y. M. C. A. building that night, notwithstanding the fact that it was raining as it had never done before in the City of the Angels. Well, the secretary showed bee-keeper Bliss how to send the air-tank skyward, and the latter proceeded to exhale into the receiver. Higher and higher went the miniature "gasometer." It began to look as if the roof would have to give way to let the top of the receiver escape in its upward tendency. Fortunately for the building, the contents of Mr. Bliss' lungs gave out before any great strain was exerted on the aforesaid roof. Then it came Rambler's turn. He was not going to be outdone by Bliss —oh, no! that would never do. So, throwing back his manly shoulders, he inhaled a full complement of the San Francisco air that then pervaded Los Angeles, and proceeded to exhale it into the tester. Upward went the tank. The trio stood back aghast as they saw the little "gasometer" mount toward the ceiling. Was the Rambler going to outdo those Californians who had been living on California ozone for years past? No; our good friend Rambler had not reached that lung power that the average healthy Southern Californian is blessed with. Bliss was in the lead by many cubic inches. Then the other members of the party tried the tester. They all beat the Rambler, but Bliss remained the champion blower of the crowd. And yet, Rambler was not satisfied. His well-known ambition to beat every thing in sight now asserted itself. He blew up the receiver again; but the register failed to record many more cubic inches than it did the first time he tried it. The others tried to beat their former record, but with little satisfaction. When the hour came for the visitors to take their departure, Rambler looked the picture of despair. For once his record as a champion blower was broken. As we wended our way to the hotel where we were all staying, the ex-champion was non-communicative. For a full half-hour he lived within himself.

The next morning all the party, except Bliss, who sallied forth early in the morning to duly celebrate the victory he won over Rambler the previous night, started to take in the town. It was a mean, wet morning; we were all without umbrellas. The Rambler, even, forgot to bring his faithful rain-shedder along with him when he left home a few days before. I think it was Mr. Mendleson who suggested that we buy a job lot of parasols. Umbrellas, in Los Angeles, are called parasols, for the reason that they seldom have much rain to speak of there; and as they have any amount of sunshiny weather, the umbrellas serve as excellent sun-shades. Well, as I was going to say, we invested in a lot of umbrellas. They were of family size, and were all alike. As we three walked the main streets of the city abreast, we were a sight to behold. Our three wide-spreading umbrellas took up nearly the full width of the sidewalk. The wonder is, that we were not taken to jail for obstructing the street.

W. W. BLISS; SUMAC AND FRUIT.

Speaking of Bliss a while ago having such strong lungs impels me to say a word about that gentleman, which I think will not be uninteresting to the readers of Gleanings.

I did not leave Los Angeles without paying him a visit. He had pressed me for a few years back to visit him when I should take in the southern portion of our State. He lives at a place called Duarte, it taking its title from the given name of the original Mexican settler, who was given a grant of land taking in a good section of the country thereabout. Duarte is something of a rival of beautiful Riverside as an unrivaled orange locality. I learned from Mr. Bliss that he came to Los Angeles with his mother some years ago. He had been troubled with weak lungs. In fact, it was thought that his life was not worth much at one time before he came to this State. The air of his native Michigan was too severe for his delicate lungs. He came here; and the change that came over him was marvelous, as those who saw the way he can raise a lung-tester consider him one of the strongest-lunged men in the State.

When Mr. Bliss came to this State he knew nothing about bees. He fell in with Mr. E. E. Shattuck, for years one of the most prominent apiarists of the country. He soon became an expert bee-keeper. Being of an inventive turn of mind he devised many contrivances that helped to make work in the apiary less burdensome. When land was yet cheap in the foot-hills he took up a government claim. He soon bought out some of his neighbors, so to-day he has a little over three hundred acres of hill land. He has cleared off something like 40 acres of this and has planted it to fruit-trees, which have been in bearing for a couple of years. He grows mostly apricots and French prunes. These are dried, and sold to local dealers who ship them to the East and other points. He told me that he would soon clear off more of the land and set out additional fruit-trees, mostly oranges. His location is a particularly warm one. Tomato vines are seldom injured by frost. I saw mulberry-trees on his place on the 10th of February, that had already made six inches of new wood. The same trees here have not yet commenced to leaf out; their buds are, however, bursting open.

Mr. Bliss is no longer engaged in active apicultural pursuits. He makes comb foundation, and deals to a small extent in apiarian supplies. His machinery was, I am told, all of A. I. Root's manufacture. When asked why he gave up bee-keeping he replied that, when he first located on the bee-range where he now resides, the white sage bloomed at a different time than the sumac, with which the hills in his neighborhood abound. But during the later years that he kept an apiary, the sumac bloomed at the same time that the white sage did. The consequence was, the two kinds of honey were stored together. This resulted in the beautiful white-sage honey being badly discolored. Sumac honey is of a dark color, and does not bring near the price the former does. For this reason he decided that it was more profitable to raise fruit. From the way honey sold in this State the last season, I am sure he could have sold all the dark honey his bees might have stored, at a fair price. I should say that the vicinity is yet a good one for an apiary, although the sumac is liable to bloom at a time when the sage is at its best. A good deal of the land thereabout is already planted to oranges and deciduous fruits. Some horticulturists are rooting out their deciduous fruit-trees and planting oranges instead. This same thing

is being done in many places in California. Deciduous fruits are being more extensively cultivated in the more northern counties, where they not only do better but come into the market several weeks earlier than they do in the south. This is one of the wonders of the State. Why fruits should ripen sooner 500 miles further north is something hard to understand. Even oranges ripen earlier 200 miles north of San Francisco than they do in the regular orange-belt of the State. No one can doubt that the southern counties have a finer climate, all things considered.

PUT MONEY IN THY PURSE.

I have borrowed this head from my friend the late lamented Willie Shakespeare, and now use it for the benefit of our impecunious apicultural societies. I should like to use it also for the benefit of individual bee-keepers; but I refrain from doing so because I believe that the bee-keepers of our land already know how to line their pockets with gold. Should there, unfortunately, be any bee-keepers who need a little more filthy lucre, they may be able to take a hint from the plan I am about to relate for the aforesaid societies.

We know that our societies are not overburdened with a big bank account. There are many calls upon the society; there are printer's bills to pay; the secretary is too ill paid, and there are lots of other things which should have a little more of the grease of the "almighty dollar" rubbed upon them, that the industry might run in a smoother manner than it now does.

The plan I would offer is this: When the society meets the next time in annual convention, let some member propose that the society get up an exhibition which it will have exhibited at the leading fairs in the State. If there are many fairs, or should they meet at about the same time, then let there be several exhibits. One member might give, or, rather, loan, a few hundred pounds of comb honey; another could give a quantity of extracted honey. Then there could be beeswax, etc. These loans could be swelled up until the amount collected would run up into tons, if the premiums warranted a grand display. The products of the apiary, along with the different appliances used with the same, would, I think, justify the society in getting together a creditable showing. Where liberal prizes are offered, the association should be able, without any great trouble, to carry off all the premiums. It might be possible to show such an exhibit at several fairs in one season. After show time is over, the wares contributed could revert to those who loaned them, or the person attending to the show could sell the different articles, and turn the proceeds over to the owners. I never saw this plan published; it may be new; and if it is I should like to see some of our societies try it. I think it could be made to work. There are many fairs where liberal sums are offered for the best display of honey. Oftentimes these premiums are never taken advantage of. At the last fair given by the Mechanics' Institute in San Francisco, a premium of $50 was offered for the best display of comb honey. When I was at the fair early in its opening, there was no exhibit of honey of any kind. If I had not sold my comb honey early last season I should surely have had a quantity of honey there, and probably would have captured that $50 prize. There was no offer for any other kind of honey, as there should have been. A society working in the lines I have tried to outline could get the agricultural societies in their districts to "map out" a fair list of premiums for competition among apiarists.

Should it be said that a society, giving a fair, object to awarding premiums on such a layout as the one I have just described, then the society that wishes to recuperate its funds in a legitimate way could arrange so that one of its members, the secretary, for instance, could get up the exhibit and draw down all the premiums in his own name. Later they could be turned over to the society for which they were really intended.

If any one knows of any reason why this plan should not be tried, I should be pleased to hear from him. There is no doubt in my mind that it would be one of the very best means to advance the interests of the bee-keeper's pursuit. We know full well, that, when the making of a honey-exhibit at a fair is left to the individual bee-keepers themselves, very little, if any thing, is done in that line. It is simply a case of "what is everybody's business is nobody's business." Where but a few jars of honey are now shown at a fair, and that of any thing but an inviting appearance, we could show tons of the most exquisite honey-nectar, I might say, that would tickle the palate of a god. W. A. PRYAL.

North Temescal, Cal., Feb. 28.

BEES IN THE OPEN AIR.

OBSERVATIONS BY J. A. GREEN.

We have occasionally had accounts of bees building comb in the open air during warm weather, when, for some reason, they were unable to find any thing that would serve as a hive. Such cases have been most frequently noticed in California or other warm places. Even in that warm and equable climate such a thing is considered remarkable. Now, I don't like to have Illinois left behind in any thing, and I am going to help her hold up her end, even in the matter of climate, that execrated and villified climate, which is the one drawback to what would otherwise be the "garden spot of the world," which we have so often heard about.

On the 25th day of last September I discovered a swarm of bees hanging on a tree in an out-of-the-way corner of my apiary. It was late in the afternoon. I was busied with other matters and I concluded to let them hang there until the next morning. Morning came with new duties, and I forgot all about the bees, and did not think of them again for several days. When I finally remembered them and went to look for them, I was surprised to find them still there. A closer examination showed that they had considerable comb built, stored with honey, and brood in all stages. Some of this brood had hatched, so that it could not have been later than Sept. 8th or 9th when they settled there, probably several days earlier. It must have been an after-swarm, led by a virgin queen, or her wing would have been clipped.

This apiary is situated on the edge of a sixty-foot bluff, with perpendicular face. Close to the brow of this bluff is a white-oak tree with its limbs projecting beyond the edge. The bees were on one of these overhanging limbs, which was in such a position that it could not readily be seen except from one spot, which ordinarily I would have no occasion to visit. This accounts for their not having been seen before.

As they appeared to be getting along very comfortably, I decided to let them stay there awhile in the interests of science. They got along well through October, and were apparently just as happy as their sisters in hives. I fed a great deal of honey in the open air by putting out unfinished sections, cappings, and combs from the extractor, putting out a fresh lot every day. Of course, the bees worked very briskly on these for a time, and, according to the usual teachings,

there was danger of inducing robbing, especially where a colony was in so undefended a position. There was no trouble from this source, though I certainly did not contract the entrance to this colony's hive, for their hive might be said to be all entrance.

About the 20th of October I took a photograph of them as seen from the ground, and then, cutting off the limb, I hung it up in the same position near the ground and took another photograph of them at close range. At this time the weather had become quite cool, and the bees did not cover the combs as they had before, most of them having withdrawn to the interior.

If you will examine the large picture carefully I think you can see that the bees are of the five-

A COLONY OF BEES IN THE OPEN AIR, AS SEEN IN ILLINOIS.

banded variety. It would seem that these extra-yellow bees may count hardiness among their good qualities.

All summer long there were piles of hives and supers containing empty comb scattered about the apiary, besides stacks of empty hives into which they might have gone if they had wished. Other swarms took advantage of these opportunities; but these were either perfectly satisfied to remain where they were, or they had no idea of looking up a home for themselves. It is in order for those who claim that bees send out scouts to look up a home to go to before swarming, to stand up and explain.

I do not know whether the habit of selecting the bare limb of a tree for a habitation, *a la Apis dorsata*, ought to be encouraged or not; but certainly the trait that would lead them to hang patiently on the limb until the apiarist comes to hive them is a desirable one. I most solemnly aver that I did not ring any bells, pound any tin pans, flash any mirrors, nor go through any other time-honored performance to induce these bees to settle and wait till I should be ready to hive them.

The fall yield of honey in my locality was very limited in quantity, so these bees were not very abundantly supplied with stores. I am very sorry now that I did not feed them enough to last them until spring, and see if I could not winter them. I thought I would give them only enough to last them as long as they could reasonably be expected to live out in the open air without protection, and then unite them with another colony. I overestimated the amount of honey they had on hand, though, and on the 17th of November, after a week of very cold and stormy weather, I found them just dying of starvation. I intended to save the combs, which would have been a very interesting specimen, but they were unfortunately broken in transportation to my new home. I have the pieces yet, and may try to patch them up. It would make a very interesting part of a bee-keeper's exhibit.

Ottawa, Ills., Feb. 25. J. A. GREEN.

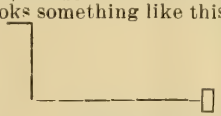
[This is quite an interesting case—the more so as we have the full and exact history. There have been other recorded instances where bees have taken up their abode in the open air, even in the Northern and Middle States. We not only believe that bees do nothing invariably, but they are quite liable to perform some strange and unaccountable freaks. We presume it would be quite impossible to compel a swarm to stay in the open air—that is, providing we allow the queen to have perfect liberty; but they do so occasionally, without any compelling. The photo was hardly clear enough for reproduction by the half-tone process, and so we made the next best thing—a zinc etching.]

RECOLLECTIONS AND EXPERIENCES; BY AN OLD BEE-JOURNAL EDITOR.

QUEEN AND CELL CAGES; BEE-CELLARS, HOW TO MAKE; WINTERING, ETC.

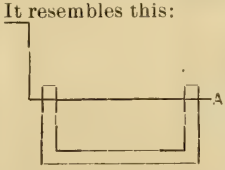
During the summer of 1874 or 1875 we bought of C. C. Van Deusen, Sprout Brook, N. Y., about three dozen spiral queen-cages. These were nearly or quite one inch in diameter, and made of heavy wire. Two button-molds, one for each end, and a mold with a hole burned through its center, were provided for each cage. These were slipped between the coils, the perforated one forming a rest for queen-cells. These cages were too thick and too heavy, yet we often used them.

Finally we made a lot of cages from No. 18 gauge stiff wire (wire not annealed), as follows: We procured a piece of common round iron, ⅝ inch in diameter, and about 31 inches long. Three inches of one end was bent at a right angle; then 10 inches was also bent at a right angle, 18 inches of the bar remaining. It now looks something like this:



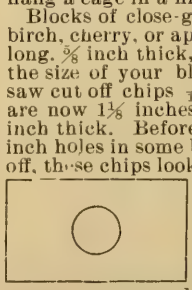
The end at A was thinned off a little, a thread cut, and a nut fitted on. A small hole was then bored nearly through the shaft, one inch from the nut A. The cost of this rig was less than 25 cents.

A board 16 inches long was nailed to each end of it; a ⅞-inch board, five inches long; a ⅝-in. hole in each short piece near the top allows the iron shaft to enter, after which the nut A is screwed on. The machine was now complete. It resembles this:



This wooden frame is fastened to a solid bench, flush with its front edge. Having provided a coil of bright stiff wire (tinned wire is best), one person inserts the end of the wire into the hole near A, and holds firmly to the wire as it winds about the shaft, while another turns the crank and holds a sharp-cornered piece of iron, $\frac{1}{16}$ inch thick, between the last coil and the one about to form. Thus proceed until the shaft is wound. With a very little practice we soon learn to wind the wire very evenly. With a sharp-cornered file, proceed to cut the coil into three-inch lengths. Take off the nut, remove the rod, and you get five cages at a wind. With a pincers to hold the coil, bend about 1¼ inches of one end at a right angle with the main coil. This penetrates the comb when you desire to hang a cage in a hive.

Blocks of close-grained hard wood, like red-birch, cherry, or apple wood, are cut 1⅛ inches long, ⅝ inch thick, and as many inches wide as the size of your block. With a thin circular saw cut off chips $\frac{1}{16}$ inch thick. These chips are now 1⅛ inches long, ⅝ inch wide, and $\frac{1}{16}$ inch thick. Before sawing off, bore or burn $\frac{5}{16}$-inch holes in some blocks, so that, when sawed off, these chips look like this:



Soak these chips for some time in linseed oil. Some strips of tin are cut ½ by $1\frac{3}{16}$ inches. Bend these round a half-inch rod, and solder both ends together. Our cages are now ready to use.

If we introduce queen-cells into queenless

hives, insert a chip, with hole near the center of the spiral cage; put the point of a cell in this hole; draw the upper coils apart a trifle, and put a solid chip in the coil just above the cell. If to be used as a nursery, and to confine the queen when she hatches, fill a tin rim, described above, with prepared candy; put this in the bottom half of the cage, and insert a solid chip under it. Years ago we put blocks of sponge, saturated with honey, into these rings; but they were uncertain, and the candy of modern times is a great improvement.

To introduce queens, slip a perforated chip in the bottom coil; roll up a ball of candy as large as will drop into the cage, and, with a little rod, crowd it back over the hole a trifle. The bees gnaw this out and liberate the queen. Now, friends, why is not this cage, used seventeen years ago, as good as any recently invented and put upon the market?

RECORD-MARKING OF NUCLEI.

Various systems for recording the condition of nuclei and colonies have been recommended, but we never found any system so complete as to number the hives. Years ago we painted numbers on squares of tin, for all our hives. Tacks held these on; but strong winds often blew them off. We finally procured the small eyes intended to fasten cords to picture-frames. These are quickly screwed in, are certain in results, and are quickly transferred. We read that ordinary lead-pencil marks on zinc become indelible, and more distinct with age. This plan is simple, and worthy of a trial.

Our daily transient record is kept on thin narrow boards, numbered consecutively. We write on both sides, and abbreviate many words; as, "htd" for hatched; "No" for number; "gvn" for given; "q" for queen; "br" for brood; "cpt" for capped, etc. During showers, and mornings and evenings, these records can be examined, the future planned, and the present work ascertained.

We have also a good-sized well-bound book in which we record the hive-number, pedigree, age, size, color, and characteristics of queens; also the traits of the workers; also how the queens were finally disposed of. It takes time, and is trouble to keep these records; but they afford us satisfaction and profit, for we can at any time ascertain which are prolific, which give a cross in breeding, and which bees are most industrious and peaceable.

As we always clip our queens after they lay, we are never at a loss to identify them. When two queens are in one hive we designate the ones in right end as 16, the other as 16 *a*, the *a* always pointing to the queen in the left end, when it follows the number used on a hive.

A good-sized market-basket carries our paraphernalia. Across one end we fit a box which becomes a part of the basket, and which reaches down about half the depth of the basket. In it a small apartment is set apart to hold the chips used in queen-cages; another holds tools for grafting queen-cells; another holds some wire nails used to mark these grafted cells; another holds a small wide-mouthed bottle for honey, the rest being used to carry spiral cages. The rest of the basket is devoted to punk wood, wings, record-boards, a can of bee-candy, and the smoker. How profitable and handy to go loaded! matches and knife we always carry in our pockets.

We nearly forgot to mention an old case-knife, ground narrow and thin, and made very sharp on both edges. This we use to cut out cells, and trim and insert the same. To keep this sharp, and avoid danger, a little wooden case was made, into which the knife-handle wedges.

BEE-CANDY; TRANSPOSITION-TOOLS.

By request, friend Root mailed us a pound of prepared bee-candy. It came in a little can, provided with a wide-mouthed cover that screws on. The postage cost considerably more than the candy, but the convenience of that can far more than compensates the cost of postage. The many improvements almost persuade us to again embark in the queen-rearing business.

The small wide-mouthed bottle for honey referred to, is kept ready to introduce laying queens. To keep this cork from going too deep and thus fitting too snugly, also to prevent its rolling, we put two thin wire nails through it at right angles, allowing them to project on all ends about ⅛-inch, cutting off the heads.

After reading G. M. Doolittle's book on queen-rearing, we decided to try our hand at transferring larvæ into queen-cells. He recommends goose-quill toothpicks, but these were too much trouble for us, so we tried our hand at forging them from thin steel wire nails; we succeeded very well as follows: Close up the steel jaws of a vise. With a round-faced hammer draw out the point of a nail thin and flat. Use a file, if necessary, to fashion the point to your idea; then insert the flat point a trifle in the crevice between the jaws of the vise, and turn over the nail as far as you wish. We made some wider, and some we bent more than others, so that, when using, we choose the one that pleases us most. Several of these can be made in fifteen minutes.

We have used a good deal of wired foundation, also very thick sheets without wire. Last season we had neither, so decided to try wiring the frames horizontally. A board larger than our frame had ⅝-inch cleats nailed on it, so that the frames just go over them, the top-bars resting on the cleats. A hinged hook at top keeps the frames from dropping off, and a projection at the bottom holds all secure. The right side of our brood-frames comes even or flush with the end of the wiring-board, and a piece of tin is hinged to the latter, so that it swings up against the side of the brood-frames. In this tin, four holes are put to indicate where they are to occur in the brood-frames. After being marked, the tin is swung back and the holes are finished.

At first two of us put in the wires quite slowly; later, the writer could, unaided, make considerable headway. This method of wiring proved quite satisfactory. In very hot weather a few broke down; and when honey was scarce, some colonies would eat some of them off at the wires.

Since we have used the square frames our bees have been wintered out of doors about half the time. Fortunately we seldom encountered a long period of very severe weather. At such times the danger is that bees will use all the stores near them, and finally starve.

In preparing to winter out of doors we invert the bottom-boards, so that the space under the frames is nearly two inches. We never have over seven or eight frames in each hive. These are in the middle of the case, with followers at each side, shingles to go loosely, set in to close the spaces below the followers; then quilts, carpets, or bran-sacks are tucked over and at both sides. By the way, bran-sacks with a hasty seam at one side, to get the necessary width, stuffed moderately with clean chaff, make fine cushions. Who else has used them? A water-tight close-fitting cap completes the task. When two queens are to be wintered, this outdoor plan is not advised, for, to some extent, the cluster is divided.

For some time we have contemplated constructing a bee-cellar right in our bee-yard, for

which the location is especially adapted, as the ground slopes gently in one and sharply in three directions.

BUILDING A BEE-CELLAR.

To build a substantial warm cellar, with small outlay, was the desideratum. We succeeded very well, except that it required a good deal of hard labor, as the ground is hardpan of the truest type. The slopes made it easy to dispose of the dirt, hence we concluded to excavate with team, plow, and scraper, including alley to the cellar. We planned to throw the dirt out of a channel 50 feet long, 7½ feet wide, and 9 feet deep. By alternate process, and cutting the banks perpendicularly with pick-axes, we finally succeeded in getting the channel. Pine posts, 6½ feet long, split from heavier stuff, had shoulders cut to receive 2½-inch plank 8 inches wide. These posts occur every two feet, and stand against both sides of the channel. To these posts the pine plank are lightly spiked. The cellar is 36 feet long. Cedar posts, cut 7½ feet long, are gained down a little at each end, to provide a shoulder inside of the plank, and rest upon the latter, thus forming the roof of the cellar. The posts were laid close together, and a few hemlock brush put on to prevent dirt sifting through. At the north end, posts were set and old boards nailed on to hold up the loose dirt. At the south end an alley 14 feet long, 3½ feet wide, ascending a little to the outer surface, was prepared similar to the arrangement in the cellar, except that boards were needed on the outside of the posts to hold up the loose dirt. At the end of this alley a wall was laid, wide enough to retain the dirt, and high enough to hold about two feet of dirt on the top of the alley. With plow and scraper, enough dirt was put on to cover the cedar-post top three or four feet under ground. Three doors, one at each end and one near the middle of the alley, completed the cellar. A ventilator at the south end of the cellar reaches out through the top, and 28 feet of 8-inch tile go out at the north end at the bottom. The 36 feet of cellar slope 15 inches toward the north end, so that water, if any, can escape, while air can be admitted through the tile. If nothing occurs to prevent, this tile ventilator will be lengthened to about 150 feet, below frost, before another winter, so that warmed air can be admitted to the cellar at any time in cold weather, while in warm weather the air will be cooled before reaching the cellar.

Bees were put into this cellar Nov. 12 and 21. Since then the temperature has been uniformly between 42 and 44° Fahr., although from Dec. 23 to Jan. 22 the weather was very cold, the temperature for at least fourteen mornings having been from 2° above to 12° below zero. During this cold weather the ventilators have been closed. The place is rather damp, and mold has formed on the bees that drop down, and on the posts at the sides of the cellar. The bees are quiet, only one colony having thus far shown signs of soiling the outside of the hive.

After the fall rains, for a time a little water trickled out of the west side near the bottom. How the bees winter in this cellar, we hope to be able to report next June. J. H. NELLIS.

A REPORT FROM ANOTHER ALFALFA REGION.

HOFFMAN FRAMES NOT SATISFACTORY.

Six years ago last June I shipped from Kansas seven colonies of bees. They yielded honey abundantly, and it sold readily for 25 cts. retail and 20 cts. wholesale. As a natural consequence, nearly all the farmers caught the bee-fever. Honey has gone down, and the bee-fever with it, and their bees are fast passing into the hands of bee-keepers. Last year was the first poor yield since I have been here, many of the farmers getting no surplus. I got 65 lbs. per colony, spring count, and I know of no one else who did quite as well.

This part of the valley is sown mostly to alfalfa, with a few patches of red clover. Our main honey crop is from alfalfa; but where it stands mixed with red clover the bees work almost exclusively on the clover. The latter yields two or three good crops, but the tubes on the bloom are not nearly so deep as they are east of the range.

We cut all of our own supplies, except sections, make our own foundation, and are about able to paddle our own canoe by A. I. Root furnishing the paddles. This, I think, is quite an improvement over my first start here when I bought fruit-boxes to work into 2-lb. sections.

We winter our bees on their summer stands, mostly in double-walled hives, with floor large enough for outside cover to rest on. I have done considerable experimenting on hives and frames on a small scale, but will not now ask space for a description, further than to say I have always used fixed distances, but not self-spacers like the Hoffman frame. I have a few, however, on the Hoffman principle; but when I want to take out only one frame (which is all that I wish to disturb, in a majority of cases), and that frame usually in the middle of the hive, I can have it out before I could loosen the follower of the Hoffman frame. I also fear the bees in this valley use too much wax for the Hoffman frame. WM. WILLIS.

Montrose, Col., Mar. 9.

THE PAST WINTER IN COLORADO.

AN EX-BACHELOR OFFERS ADVICE TO RAMBLER.

Of all the literature that comes to my home, GLEANINGS is the first to be opened and read; first to be welcomed; brightest and best of them all. Indeed, words fail me in trying to tell of its merits, and how it is welcomed in my home. Sometimes it does not get here on time, and I feel perfectly blue; and I say to my wife it seems that I have lost something. And, hold now! speaking of my wife, perhaps not everybody knows I have a wife. Well, I have "all de same shust." Thus it is that the bee-keepers are finding themselves queens. Call them what you may, friends; but if all the bee-keepers enjoyed married life as well as I do, who can blame them for getting married? Thanksgiving day, 1892, marked a change in my bachelor's life, which thus far down life's steep decline I have not for once regretted; and my admonition to the bachelor friends out in California, that Rambler talks so much about, is, to get married. But I will not dwell long upon one subject.

Dr. Miller, in Stray Straws for Feb. 15, remarks that the cold has been no greater—indeed, not so great—in his locality as during some other winters; but that its staying qualities have been unusual; and, again, March 1st he says the severe winter has the hopeful side that the ground is continually covered with snow, and that, therefore, the clover ought to be well protected. In the same issue you remark editorially that your bees have never gone so long without a cleansing flight as this winter, and that your apiarist thinks their last flight was during the latter part of November.

Now, friends, it is too late or too early, I should say, for fish-stories; but the evidence is too plain to be misconstrued, when there are plenty of bee-keepers in this locality who can testify to the same story, that our bees have

been out at least two thirds of the days since Christmas; and to-day, talk about fine winters! We have had a most beautiful and sublimely grand winter—little snow, little cold weather, excellent roads, and every thing that goes to make up a first-class mild winter. Alfalfa is starting up, and from the present outlook we shall have a pretty early spring.

Although the winter has been very mild, yet I think the bees are coming through in pretty good shape; at least, mine seem to be pretty strong at the present time. I have been confined so closely at home, building me a honey-house and shop, that I have not visited around much, and have seen but few people to ask in regard to the way that their bees are wintering through.

Bee-keepers are, I believe, cherishing the idea that the old saying that one extreme follows another will be verified this season; and who is there but hopes that it will be thus—namely, since the honey crop was so short last season, it will be more than doubled this one?

ARE THE SEASONS IN THE IRRIGATED ALFALFA REGIONS UNIFORM?

I noticed on page 132, Feb. 15, that one W. H. Upton, of Morning Sun, Iowa, asks whether the seasons vary as much in the irrigated districts as in other places. I have seen no statements, pro or con, upon the subject, as yet, so I feel frank to offer my opinion. It is this: The season does not vary enough to make any showing at all; but when the bees commence to gather honey from the alfalfa there is one constant stream, so to speak, of honey coming in every day. It might be said that it tapers off toward the close, and you can then see the difference; but usually, for six to eight weeks there is not much of a variation. Theo. V. Jessup.

Greeley, Colo., March 8.

A VISIT WITH NATHAN STAININGER, AT HIS APIARY.

HOW TO KEEP DOWN INCREASE AND SECURE LARGE CROPS OF HONEY; SWARM-CATCHERS, ETC.

It has been remarked, that one valuable feature of a convention is the opportunity it affords for private talks between individual members. Now, if such interviews can be held right on the scene of action, in the apiary, shop, and honey-house, where all original methods and bright ideas may be illustrated and demonstrated, there is not only an added charm, but a clinching effect.

Accordingly it is becoming customary for bee-keepers to visit around among themselves, and to write up such occasions for the benefit of all; and as I like this fashion, I wish to tell you about a pleasant visit I enjoyed last fall with one of Iowa's most skillful honey-producers.

For several years past I have had pleasant business dealings with my friend Mr. Nathan Stainingcr, formerly of Denison, and for the past three years a resident of Tipton, Iowa, which is about 25 miles from my home at Mt. Vernon.

I had never met Mr. S. until, as an outgrowth of our correspondence regarding some of his methods, he challenged me in a friendly way to come down there and "size him up," or something to that effect. I promptly accepted, and early the next morning I knocked at the door of his neat residence, in the suburbs of the city. Just as I expected, and as his good wife informed me, my friend was in the shop a few steps back. The door was open, and I entered. He was seated in an easy-chair, but in his work clothes, and fully occupied for the time. A sleek-looking agent was entertaining him with some stereoscopes and views. This gave me an opportunity to take in the situation.

This was his large and very neat and clean honey-room and shop, with a large and well-equipped work-bench in one end, an extractor and other honey-utensils in the other; a foot-power saw at one side, and the whole middle of the room occupied by a huge pyramid of glassed cases of comb honey of snowy whiteness. Several other piles of nice fall honey stood at the sides. Through the back window and screen door I could see a neat apiary of about 230 colonies.

My friend patiently took in the panorama, and, after declining the fervent overtures of the agent, and receiving his retiring bow, he turned to me with an inquiring but businesslike air, which I recognized as the announcement "next!" I introduced myself. We both laughed, shook hands, and were soon lost in bee-talk.

I stayed all day and all night. You see, I wanted that pile of honey to help supply my customers, and we had no time to talk business until too late for the train that day.

Friend S. makes a specialty of comb honey, and his system and appliances reveal a tact in selecting the best ideas of others, to incorporate with his own. His brood-chamber is just the right size and shape, he thinks, being cut to fit the brood-nest (?) except that about an inch is allowed for sealed honey above the brood, upon which the bees can wipe their feet before entering the sections. There are eight brood-frames, a little deeper and some shorter than the L. frame, being two square inches less in size.

He discourages excessive and premature swarming, and keeps the white honey out of the brood-chamber by shifting the two outside combs to the center, replacing them with the two that contain the most young larvæ and eggs. If this is done at just the right time, swarming is often prevented entirely, and piles of comb honey are the result. As a proof of this, there stood the only good crop of comb honey that I know of having been produced last season in this part of the country.

He uses the T super without separators. It is the same size as the brood-chamber, except in depth, and that is just right to take 24 sections, 4¼ x 1⅞, with no space at the ends to be filled up, as with T supers for the L. hive. He fills the sections nearly full of extra-light flat-bottom foundation, 14 square feet to the pound. He gets nearly all of the white honey in sections, and depends upon the fall crop to complete those that may be unfinished, and to furnish stores for winter, and he extracts what is over.

Mr. Stainingcr keeps all of his bees in one apiary at present. He clips his queens, uses a swarm-catcher, and never loses a single swarm. The grass is kept close with a lawn-mower. The yard is smooth and level, but slightly sloping to the southeast. With a few exceptions there are no trees nor vines.

His swarm-catcher is a wire-cloth box or cage, about 4 feet long by 12 inches wide and 10 high. It has a board for the bottom or under side, and one end is open full size. This open end is bound with a wooden frame, which is made to fit closely to the front of the hive while doing the catching act. A cloth curtain is attached to the upper side of this frame, which is thrown down over the opening as soon as the swarm is secured.

The bees are sprinkled with water, to keep them from worrying while in the cage, and from taking wing afterward. The swarm is then dumped from the cage into the hive it is to occupy. He has tried, with some success, Dadant's

method of returning swarms to the parent colony, 48 hours after hiving. He rears queens, from imported Italian mothers, by Doolittle's transposition cell-cup process, but he has the cells built out in queenless colonies, or nuclei, instead of in upper stories. He showed me with enthusiasm a lot of such cells just started, and others further advanced.

Although this was the 28th day of September, and there was apparently not a drop of honey coming in, the bees ready to rob upon a moment's notice, and no feeding was done, still the queen larvæ were swimming in an abundance of royal jelly, and the young queens, just hatched, were well formed, and of fair size.

His secret of success under such unfavorable circumstances is, that he does not depend very much upon the bees to feed the queen larvæ. He just fills the cell-cups about half full of the jelly before inserting the larvæ, and the bees have but little to do about it except to seal the cells at the proper time.

He winters all in one cellar, with good success. He leaves the bottom-boards on as in summer, but removes the covers. A warm mat of woolen carpet is placed over the frames and tucked down closely, confining the bees, except at their summer entrance at the bottom. A free circulation of air over the mat is provided for. This mat is removed, or a board is placed under it, before the bees begin to gnaw much in the spring.

Friend S. reports that, from about 170 colonies, spring count, he received, during the past very poor season, 12,700 lbs. of honey, nearly half of which was in sections. Not counting about 2500 lbs. on hand, and sold at home, what he shipped to dealers brought him $1276.93. He has 230 heavy colonies in the cellar.

Aside from the bee-business, Mr. S. runs a thriving watch, clock, and jewelry business down town, where he spends his evenings, and where he has a skillful jeweler in charge.

I prize the many practical suggestions I received during my visit, and the aspirations they awakened; but the cordial hospitality with which I was entertained prompts the kindest regards. God bless my friend and his home circle. OLIVER FOSTER.

Mt. Vernon, Linn Co., Iowa, Mar. 28, 1893.

OURSELVES AND OUR NEIGHBORS.

Therefore take no thought, saying, What shall we eat? or, What shall we drink? or, Wherewithal shall we be clothed? (for after all these things do the Gentiles seek); for your heavenly Father knoweth that ye have need of all these things. But seek ye first the kingdom of God, and his righteousness, and all these things shall be added unto you.—MATT. 6:31—33.

For almost the first time since our business was started, we found it advisable last fall to stop our wood-working machinery for about three months. Heretofore we have kept our machinery running the year round, making up work during the dull season, in anticipation of the rush during the busy season; and even after doing this, we have, during several seasons, found ourselves sold out before spring was fairly here. In such cases we have, as you know, by means of electric lights, run our works day and night in order to keep up. Of late, however, we have had several poor seasons for honey, in succession. Others have come into the field, until it has seemed that the supply business in some of its branches was rather overdone. This state of affairs, however, does not belong particularly to our industry. It happens now and then in almost all kinds of business, especially in any kind of business that has been growing and developing as has the business of producing honey. Other establishments in our vicinity have had their periods of lying still at certain seasons. But I do not know but I have boasted a little that *we* kept *our* business going the year round, and kept our hands at work right along—that is, a large proportion of them—winter and summer. Not only that, but by means of our exhaust-steam heat, and well-protected comfortable rooms, we have given our help comfortable places to work in, even during the most inclement weather. Of course, a good deal of our help was inconvenienced by our stoppage last fall; and the more so because we could not tell them how long we should be obliged to shut down. At first we thought it might be for only three or four weeks. At the end of that time, however, the prospect was no better, and so the time of starting up was put off from time to time, until many of them became discouraged. A great part of them, it is true, found something to do elsewhere, and a good many lost scarcely a day. Some people seem to have a faculty of making themselves useful, and are, therefore, always wanted; but others do not have such a faculty. You know how it is. I think, however, that a good many might cultivate this talent of being useful somewhere every day, a little more if they tried to. But this, however, is outside of our line of talk to-day.

This spring we have had a fairly good trade. I believe we sold as many goods during the months of February and March as we ever did; but notwithstanding this, there were conjectures among our help as to whether we would shut down this year as we did last; and as the matter was talked over from one to another, a general uneasiness seemed to get started. Quite a few came to me, and wished me to give *them* a promise of work right straight along through the season as usual. I do not mean that they wanted a *promise* as usual, for of late years I have been careful about making such promises; and, in fact, I sometimes say, "Why, my good friend, there is not a man, nor woman either, in my employ, who has a *positive promise* of work every day in the year, no matter what the future may be." Perhaps I might add here, that I have found by experience that it is, as a rule, very unwise to make such business engagements. Of course, when we have good men or a good man, it is an excellent thing to let him know what to expect; and under many circumstances you can give him a writing to that effect—that is, that he is to have work the year round. This agreement should include that your helper is to give good and faithful attention to his business, etc. I have many helpers who have been with me for years, and who expect steady work unless some unforeseen disaster should hinder; but at the same time there is no written or verbal agreement, that I know of. The reason why these people do not become uneasy, and hunt up a job elsewhere, is because they have known me long, and have faith in me, and I have known them long, and have faith in them.

Well, when this uneasy feeling got started among our people, and when I told one after another that I could not make them any positive promise, as usual various reports got afloat. Several came to me, wanting to know if it were true that we were going to shut down on the first of June; and one good friend had reported, so I am told, that we were going to shut down during 1894, and not run at all; and he became so uneasy in regard to the future that he finally gave up his place entirely, and went away hunting work somewhere else. Of course, he was not a very valuable man, for these uneasy ones

who are always borrowing trouble, instead of making the best of the present, are seldom valuable hands. Another thing, a discussion arose as to who was to stay and who was to go when this dull time came when there should be work for only a few; and some even went to our old hands and tried to convince them that it was not fair nor right nor Christianlike for them to have *all* the work, and others have only a little. I was finally obliged to say to such, that such matters would have to be settled by their employers, even though, in one sense of the word, it did not look exactly fair. Just think of keeping one man one week, and another man the next week, and so on during the dull season, so as to give all an equal chance! Perhaps I might add, that, where our good help want to take a vacation, we are always glad to arrange matters so as to accommodate, even though they should want to be gone for three or six months. Well, this matter of worrying about the future came up so often that I finally gave the friends a talk one day at our usual noon service; and as the day following was "text day," I asked each one to hunt over his or her Bible, and see what that had to say in regard to this matter. Of course, I had prayed over this state of affairs, and I was not greatly surprised when we had such a number of bright, hopeful, and deeply spiritual texts that they seemed to me like an April shower after the storms of winter; and it was this event that brought to mind the sentiment expressed in the text at the head of this talk to-day. Of course, the severe winter, with its many losses of bees, makes the outlook, not only for our helpers here, but for bee-keepers generally, rather unpromising. We do not know what April showers and a favorable season may have in store for us. But it would be very unwise—in fact, it would be foolish for us to worry, and borrow trouble over a future that we know nothing about. While thinking of the anxiety of the friends here around me, I have been reminded that probably there is more or less anxiety in the heart of every reader of these pages. What shall the harvest be? We do not know; and I for one am glad that I do *not* know. God knows, and that is enough.

Some of the friends who do not love the Bible because they do not take it right, may take exceptions to the expression, "Take no thought," etc. The Bible surely does not mean to say that we should not think of the future, and make careful provision for it; but you will notice, in the last verse of our text, it says that, instead of thinking about what we shall eat or drink, or in regard to clothing, we are to "seek first the kingdom of God, and his righteousness." And, by the way, that is my old, old text—the one that has been such a joy and comfort to me ever since I have found these Bible promises to be a mine of wealth beyond any thing else the world has yet furnished. These were the words of our loving Savior who came into the world, and who looked on the world and wept because of men's narrow, low, and selfish strife to get all there was to be had, or to get ahead of their neighbors. If we listen to him, while it is our privilege to commune with him and to get instruction from him, we ought to be ashamed of worrying. It is well enough for those who have no faith in God, to be selfish and grasping; and Jesus said, "After all these things do the Gentiles seek;" but for the Christian who trusts in God—why, the idea is awful. I wish I could repeat the texts that we had at that noon service. They came first from one side of the room and then from the other; and as one text started a thought, somebody else took it up by another text, until they seemed to branch out in every direction.

Some of the texts I am going to give you were repeated at that noon service, and some of them have occurred to me since then in thinking of the matter; and I hope they may do you as much good as they have myself. The chapter from which our text is taken is brimful of reproof and promises in this line. Commencing at the 19th verse, Jesus says, "Lay not up for yourselves treasures upon earth"—those old familiar words that we have heard from childhood up; "but lay up for yourselves treasures in heaven." And, again, "Therefore I say unto you, Take no thought for your life, what ye shall eat, or what ye shall drink; nor yet for your body, what ye shall put on." The meaning is, of course, that we shall not be *anxious* about these things in a narrow way. Sometimes the younger ones at our table, especially when they come in from their plays very hungry, will begin to sing out, "Give me some of this;" or, "Give me some of that." As a reply I often say, "Shall I give you some before mamma and the baby, or anybody else, has had any?" They almost always hang their heads at this, and look foolish. Well, when somebody comes to me, and says, "Mr. Root, can't I have a place the year round?" etc., my reply in such cases is often like that to the children: "Why, my good friend, if I should keep you the year round, no matter how dull business may be, it would necessitate stopping somebody else, that *you* might have a place. You are a big strong man, and can work in the harvest-field, or almost anywhere else. There are in my employ, as you know, not only fathers who have large families to support, but there are widows with considerable families of children. Would you want me to stop their work that I might keep you?" Now, this is the sort of spirit that these verses are intended to rebuke. Jesus says, again: "Behold the fowls of the air, for they sow not, neither do they gather into barns; yet your heavenly Father feedeth them. Are ye not much better than they?" And Luke, in presenting the same subject, closes with this touching thought: "How much more are ye better than the fowls?" The thought is to me as if the Master meant to say, if God cares for the fowls and the birds, is it likely or reasonable that he forgets to look after the welfare and comfort of his own children—those created in his own image?

But there is a condition to this, remember. We are to be seeking first God's kingdom and his righteousness; and this includes looking after the widows and fatherless. If they are in the crowd seeking for a livelihood, surely any big strong man should stand back and give them the first chance. In fact, the promise is to those who do this, and not to the selfish and greedy ones. The average millionaire can not find any comfort in these promises at all. In fact, he has voluntarily cut himself off from them. Millionaires are not happy. We have recently been told of millionaires, or people who were so wealthy that they were almost millionaires, committing suicide. With all their wealth, this world had nothing to offer them—no attraction. They seemed to have forgotten that "a man's life consisteth not in the abundance of the things which he possesseth." Another of the texts was, "I have been young, and now am old, yet have I never seen the righteous forsaken nor his seed begging bread."

In regard to wanting a place whether others had one or not, somebody repeated the text, "In honor preferring one another." We are told that the Savior "pleased not himself;" and for those who are seeking the kingdom of God, and his righteousness—those who are working for the general good of mankind, without thinking of self or how much *they* have been doing for humanity, we have the following wonderful

promise, when the lives of these good people shall be finished: "Come, ye blessed of my Father, inherit the kingdom prepared for you from the foundation of the world." When the end of all things comes, it is not to the *greedy* and to the *strong*, and to the successful ones in elbowing *ahead* of the rest of the crowd; but it is to the humble and faithful follower of Christ Jesus. In fact, they are to inherit *all* things. "Blessed are the meek, for they shall inherit the earth." Again, the kind and loving Savior uses these wonderful words to his faithful, trusting, obedient ones: "Fear not, little flock; for it is your Father's good pleasure to give you the kingdom."

Now, please let us understand, friends, that these promises are to the rational and consistent Christian. In this world we meet many who complain and murmur, saying they have been unselfish and kind, and yet God has not rewarded them. Some of them say, "I have been too honest to get a living." Some even say, "I have tried Christianity, and it does not bring sufficient to support my family."

A young friend of mine who was dismissed because he would persist in leaving his own work and rambling about through the different rooms of the establishment, urged as a reason why I should *continue* to keep him, that he had been going to meeting right along regularly of late. What he said was true. He had been attending the meetings; but this fact did by no manner of means atone for his neglect of business during working hours. Christianity must be consistent. If a man is not honest, and faithful to his employer, attending *all* the meetings won't amount to very much in enabling him to earn his daily bread. While considering this matter, I can almost say as did David, "I have been young, and now am old." I am not very old yet; but I am getting older day by day; and my observation is this: That there is a continual and *unceasing* call for good men and good women. Of course, we want a well-balanced man. We have not any use at all for one who thinks that going to church is going to excuse him from attending strictly to his business. The man who commences Monday morning to figure sharp and keen to see how he can get more pay without rendering a corresponding equivalent to his employer, is not wanted anywhere; but one who sets to work on Monday morning to look after his employer's interests, to study up short cuts in business, to look out for leaks and losses, and unnecessary waste, if he is even fairly bright and smart will be wanted right and left. Some of my very best help, and some who are climbing steadily to better pay as the months and years go by, will often say, "Mr. Root, wouldn't it be a better way"—and then he will go on to explain how he could make a short cut—kill two birds with one stone—possibly have the team take a load both ways instead of carrying an empty wagon half of the time. Just now we have a carload of beautiful potatoes stored in a good cellar; and in order to keep them from sprouting, I want that cellar open nights, or at any time when it is *colder* outdoors than it is inside; but when the air outdoors is warmer than it is inside, I want the doors closed, and the shutters put over the windows, so as to keep the sunshine and warm air out. If it were not for my burden of cares, *I* could attend to this nicely, and I really enjoy the fun of doing it.

The same operation is required with our hot-beds and greenhouses. Oh how I do love to manipulate the sash and the shutters, so as to make every hour of the 24 count in the growth of these plants! It needs wisdom and sense, and *devotion* to the business in question. Sometimes a fierce wind, even when the weather is warm enough, twists and whips off the little plants, recently moved from the greenhouse, so as to do them considerable injury. If it is a cloudy day, the sashes may be put over them to keep this wind off. If the sun is shining, however, the shutter should take the place of a sash. Little plants, newly transplanted, should be protected from the sun by means of shutters until it clouds up, or until night comes. You see, we must watch the *sun*, watch the *temperature*, watch the *wind*, and watch the *rain*. We must make all *four* of these *serve* us.

How many people are there, do you suppose, who could be intrusted with such a task? Not very many. We want somebody who *loves* the plants; somebody who loves them because they are *God's* creation would be the right man for the place; but as such duty would not occupy all of his time, we should want to set him at work transplanting, getting out weeds, and sowing seeds in the meantime. Then he must have enough interest in and love for his work to keep watch of the sun, the clouds, the rain, and the temperature, at the same time he is doing this other work. Oh! there *are* such men, for we have quite a lot of them in our different departments. But they all bring a good sum of money almost anywhere. When we find such a man, we tell him what he is to do, and keep an eye on him to see that he does not get caught; and when we find that he manages it all nicely—no plants are scorched or frosted, nor left covered up so they can't get the rain when it comes, then comes the pleasant feeling—we can *afford* to increase his wages. The chances are that he will be *surprised* when we tell him he is worth more money. You see, he has been so devoted to the interests of his employer—or, in other words, he has been so devoted to his allotted task of making the little plants thrive and *boom* (the last word may be slang, but no other one expresses exactly what I mean), that he did not even know he was worth more money. It is like those people in the text, who said, "Lord, when saw we thee a hungered or thirsty?" etc. Contrast this kind of man with one who is worrying all the while because he does not get what he *thinks* he is worth, or because he does not get as much as A, B, and C right around him, when *he* is sure he is a better man.

While thinking of these things, and this matter of worrying about the future, another old familiar text brings up past memories—"O thou of little faith! wherefore didst thou doubt?" Why, my dear good friend, there are thousands and thousands of good places, with excellent pay too, for the man who will enter into his work with such heart and soul that he can manage a greenhouse and a lot of plant-beds, or do a hundred other things of like care and responsibility. The only condition is, that he must be in love with his work and with his fellow-men, instead of being in love with self, and narrow selfish interests. The last verse of our text hits the whole of it—"But seek ye *first* the kingdom of God, and his righteousness, and all these things shall be added unto you."

GLEANINGS is still a welcome guest at my home, and is a great blessing to my wife and myself. It may be some satisfaction for you to know that here in far-away Australia GLEANINGS carries spiritual blessings with it, and that in many homes you and your very practical Home talks are very much talked of and appreciated. I believe what is wanted in the work to-day is more of the homely influence you disseminate through your journal, to successfully lessen existing evil. God bless you, and long spare you for the excellent good you are doing. A very poor honey crop this year all over. I shall be sending away an order to you about April next.

GEORGE KENDALL.

E. Bundaberg, Queensland, Australia, Feb. 22.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

GROWING MUSHROOM SPAWN IN AMERICA; SOME NEW AND VALUABLE FACTS FROM OUR GOOD FRIEND E. GRAINGER.

Mr. Root:—Some time ago I read (in GLEANINGS I believe it was), that mushroom spawn could not be produced in the ordinary hot-bed frames. For several years we have found, in taking down our hot-bed frames in the fall, that the manure which was put in early in the spring time was more or less full of mushroom spawn. If these beds were covered, we used to get quite a nice lot of mushrooms until the frost prevented their growing. Without using any spawn whatever to start them, they just seemed to grow of their own accord. Last fall we took some into the greenhouse, put it under the soil where we grow lettuce, and it produced mushrooms successfully during the winter. Had we saved all the manure with mushroom spawn in it we could have made a very large bed without the expense of buying spawn. We use quite a lot of cow manure in connection with our potting soil. Sometimes we get it in the summer, about August, from milkmen who are in the habit of milking their cows under a clump of trees. Last year we got one man to bring us some of this, which was perfectly dry. It was laid in a pile in the sun, exposed to the weather. It got wet during a thunder storm, and I noticed, in a day or two after, it commenced to heat. We leveled the pile down until it was about a foot deep; and when doing so I saw that it was full of a white stringy substance which experience has taught me to recognize at once as mushroom spawn. We took it into the potting-shed, threw it under the bench, covered some fine soil over it, gave it a watering, and in a short time we picked the best and finest mushrooms we ever saw grown in the winter. They were extra fine, and came up thick all over the bed. This year we have gone into this more extensively, following directions given in best works on mushroom culture, using imported spawn. They have been tolerably successful, but do not produce as many nor as fine mushrooms as the beds made as described above. To test the two we took some of the spawn from the hot-bed frames, just as it was, and buried it in a corner of our mushroom-bed that was spawned with imported brick spawn, and we noticed the mushrooms came sooner there, and were finer, than those grown on the other part of the bed. We made one bed in the summer, putting the manure into one of our greenhouses after all the plants had been taken out. It got very dry from the heat of the sun; and, being busy, we neglected to water it, and did not expect to get any mushrooms. There was no spawn used; yet where the drip from a ventilator got on the bed, and gave sufficient moisture, very fine mushrooms grew thickly, showing that, had the proper amount of moisture been given, the bed would have been quite as successful.

We give you these facts from our observation, which, we think, go to prove that the main point in growing mushrooms is to have the beds just moist enough; and when the temperature becomes low enough they are bound to grow.

It would appear from the above, that any manure has more or less spores in it, that produce mushroom spawn; and it requires only the right temperature to develop them. We are now trying some in a cellar, which, we think every thing considered, will be the best place, as the temperature can more easily be kept equal.

There are three distinct kinds grown here; viz., the "horse" mushroom, which we sometimes find in the fields in the fall; the common meadow mushroom, which is the kind generally produced from imported spawn; and the St. George mushroom, this last being the best of the three varieties. It is stronger, larger, much heavier, and has more substance in it. This is the kind produced by the cow manure referred as above, and we think it is the same variety advertised in the *American Florist* as new.

We find mushrooms very profitable here, getting from 60 cts. to $2.00 per lb., average-sized ones selling from 60 cts. to 75 cts. a dozen in the summer. We will let you know later on how we succeed with the beds we are trying in the cellar. E. GRAINGER.

Toronto, Can., Feb. 24.

[Friend G., we are very glad indeed to get the above facts. It has been impressing itself on my mind for some time, that a good many of these so-called toadstools are edible mushrooms. You know I made one experiment in that line; and the result was, that what we had thrown away as toadstools proved to be as good mushrooms as any on the market. I have read somewhere of a scientific man who made tests of all the mushrooms that could be found. He had each specimen properly cooked, and then took one mouthful. If it tasted good, and no unpleasant result followed, at the next meal he ate a dishful. This settled the matter that it was an edible variety. Now, this can be very easily done, and I am quite certain that a single *mouthful* of even the poisonous varieties would be safe. Another thing that impresses itself on my mind is the fact that people are often made violently sick by eating freely of some article of food that their system was unused to—green cucumbers, for instance, and new fruits and vegetables of various kinds. And another thing along in this line, I am inclined to think that one might so accustom himself, by taking a little at a time, that he could eat, at least to a certain extent, of the so-called poisonous mushrooms. I am very glad indeed to know there is a probability that we shall very soon be able to grow our own spawn; nay, further; that there is already in our fields just as good mushrooms as any to be found anywhere in the world. Of course, neither mushrooms nor any thing else will grow unless some seed has been planted at some time. This spawn you mention must have existed on your premises, and perhaps it has been for years unnoticed, only waiting for the right kind of encouragement, such as you have been giving it, to spring forth and minister to your wants.]

THE PLANT-BEDS AND THE GREENHOUSE FOR APRIL, 1893.

The greenhouse has done nobly. We never before had such nice plants with such steady, uniform, vigorous growth, as this has given us. But its beauty is just now pretty much on the wane, because the orders have cleaned out nearly every thing that is fit to be shipped.

The six rows of American Wonder peas that were sown in December are now white with bloom, and also contain pods, some of them almost large enough for use. The greenhouse seems to have had some peculiar effect upon the peas, to keep them growing and bearing. Snails threatened several times to eat up the peas and every thing else; but a prompt and

liberal application of tobacco dust laid them out at once. By the way, we have suffered much loss for several years past by snails eating our wax beans; and we have only recently discovered the cause of our trouble. Plenty of tobacco dust makes an excellent fertilizer, and also does up at once any such enemy. Right over the six-inch tile that carries the exhaust steam to the greenhouse, we have a plant-bed about 75 feet long. This was filled with onion-plants growing nicely; but I thought we would put some wax beans between every other row, thinking they would be about ready to take the place of the onions when they were sold off for onion-plants. To my surprise, however, the wax beans came up—or it seems as if they came up almost as soon as I turned my back after planting them; and in a few days more they put out great broad leaves, so large they shaded the onions and every thing else; and, all together, we have the most promising lot of wax beans under glass I ever saw. We have made tremendously heavy plantings of Jersey Wakefield cabbage seed this season; but so many of the orders have been away up in the thousands that at present we have not a plant fit to send out, and it is the same way with Early Summer. With our rich plant-beds and plenty of sash, however, it is an easy matter to push cabbage-plants, and we have got thousands on the way.

The orders have not been so strong for celery-plants as yet, so we are in hopes to have lots of nice ones before the demand comes.

The weather has been, perhaps, the finest I ever saw for the fore part of April. We have had sunshine almost every day, and frequent "April showers," and no very severe frosts.

The demand for lettuce-plants has been rather greater than usual. To-day, April 11, we are putting up an order for 3000 Grand Rapids, to go away off to Colorado. As they are cold-frame plants, with large bushy roots, I think we shall be able to get them through in good order. By the way, a cold-frame plant that has had its foliage pretty severely pinched by the frost, after it once gets vigorous in the spring has a more stocky and bushy root than we can get very well from greenhouse plants. I suppose we might do it by cutting back the foliage; and, by the way, our American Pearl onion-plants raised in that new greenhouse are getting to be just beauties. They grow so fast we cut back the tops twice. The last time, one of the men sheared them so closely I feared he had done them harm. The bed looked like a small boy after he has been to the barber shop in the month of June. There was hardly any thing left but stumps and roots. We gave them a good cultivating, however; and, by the way, this cultivating in plant-beds we do mostly with the head of a nice steel rake. Sometimes a garden-rake breaks off at the shank. Do not try to mend it, but take the head and use it for a weeder. If it has a dozen sharp tempered teeth, or more, all the better. After cultivating the ground up very nice and loose, and then giving the plants plenty of water quite frequently, they started up and made an astonishing growth. I am sure this method will pay, for we do not want to take onion-plants out into the field with a great long slender top that would just droop down in the dirt. They should be sheared off a week or ten days before transplanting. We do it with common shears; and by holding a large square tin pan close to the row of plants, the tops may be readily saved. In fact, we have been selling them on the wagon. After they were gone, the boys said several customers wanted some more of those "chives." That reminds me that we used to have chives in our garden when I was a boy; and if there is a demand for them, we certainly should be glad to furnish them. They look like onions, only they grow in great clumps, and only the foliage is eaten. When the plant gets fairly rooted, you may shear off the tops almost every other day; and it will keep growing and spreading and increasing in area.

Our American Pearl onions that wintered over can now be said to be safely out of the woods. There is a good stand, and we shall doubtless have quite a crop of big handsome onions about strawberry time. The peas we planted in the open field about the first of April are now up nicely, and large enough to cultivate; the same way with beets.

We have had bad luck in getting pepper-plants. Although we have sown the seed again and again, even in the new greenhouse, we have but a small supply of plants. We think it can not be the seed, because we have tried seed from three or four of the best seed-merchants, but very likely because they require a higher temperature than almost any other plant.

The Freeman seems to promise to be the coming potato. When I told you I had six barrels, I had no idea that so many of you were going to want a *barrel* apiece. We are trying to get some more at some price, but I fear we shall not succeed.

A year ago Peter Henderson advertised the St. Martin rhubarb roots and plants. On their recommendation I bought half a dozen roots and half a pound of seed. The roots we received were rather small, and I did not think best to make a test last year. This morning, however, I had a sauce-dish of the St. Martin rhubarb, and also one of the ordinary kinds. Sure enough, the St. Martin has a very distinct and pleasing berry flavor. If your eyes were shut you would think it were something between a gooseberry and a huckleberry. Come to think of it, I do not know but it is more like the Sterling strawberry, after all—that is, there is a peculiar tartness about it that reminds one of the strawberry. I think it is going to be an acquisition. So far as vigorous growth is concerned, I do not see that it is any different from the common. The leaf-stalks, perhaps, have a brighter scarlet tint than we ordinarily see in the common rhubarb.

My experiments with fertilizer furnished by the Mapes people begin to promise better. At first I used rather too much, and the onion-plants were set back a little; but after they recovered they showed a darker green, indicating strength and vigor. When I raked it into the seed-bed for cabbage-plants, and then followed it with lime, just as we are in the habit of using guano, it seems to have almost the good effect of guano; but as it *contains* some guano, this may in part account for it. We will make further tests, and report.

We are having excellent spinach now right along, that wintered over without any protection.

Is it not strange that something often happens to a plant that we value particularly, and take unusual pains with? We gave our Timbrell strawberry-plants the best place in the new greenhouse, and did every thing we knew how, to make them grow. They started with wonderful promise. But a few days ago I noticed that a leaf would be missing here and there. Finally one plant had lost all of its leaves; and this morning only two were left having any leaves on at all. As nearly as I can make out, it was the work of mice. What does possess such vermin to go and pick out the most valuable thing you have on the premises? If I had put my strawberries in the open ground, and given them the same treatment as the ordinary kinds, I should have been very much further along.

SOME GERMAN POETRY.

Some time in the winter, one of our sturdy German workmen handed me a little bit of newspaper clipping. The print was German, and, of course, I could not read it; but he said it was something that would just suit me, and he said it was like what I wrote for GLEANINGS; but as he could not talk our language very well, that was all he could tell me about it. But he insisted that it was something of such great value that it ought to be put into GLEANINGS. At the time, I did not know that it was poetry, but we gave it to "W. P." to translate. Our German friend made inquiries every two or three weeks, but somehow or other the translation did not materialize. When it did come, however, I for the first time understood why it is difficult to make a translation, so as to make poetry and rhyme in English out of what was poetry and rhyme in German; but I was so much pleased with the result that we give the translation below; and as our German friends may like to see how well our stenographer did his work, we give also the German text for their benefit. By the way, don't fail to consider what a fine compliment I received from our good friend Mr. Ruff when he told me that it was just like my writing. Here are the "Golden Sayings" that took such a hold on him.

Goldener Spruch!

Wer seinen Acker fleißig baut
Und dabei Gott dem Herrn vertraut —
Wer gleichermaßen wohl bemißt
Was er der Wiese schuldig ist —
Wer seinen Viehstand sorgsam pflegt
Und Futter stets in Vorrath legt —
Wer jeden Handel baar besorgt
Und nicht leichtsinnig kauft und borgt —
Wer mit der Sonne früh aufsteht
Und frisch an seine Arbeit geht —
Am Sonntag ruht, und Herz und Geist
Mit Gottes heil'gem Worte speist —
Wer sich an Ordnung, Reinlichkeit
Im Haus und Hof und Stall erfreut —
Wer Habsucht und Verschwendung flieht,
Wer seine Kinder fromm erzieht —
Wer mäßig bleibt in guter Zeit
Und gern entbehrt in Noth und Leid —
Wer auch in dem Geringsten treu,
In Wort und Werk von Falschheit frei:
Mit dem wird's gut im Hause stehn,
Wie es auch kommen mag und gehn.

GOLDEN SAYINGS.

He who gladly turns the sod,
And thereby shows his faith in God;—
Who takes no more from off his farm
Than comes back to it from the barn;—
Whose flocks and herds are warmly housed,
With hay and fodder well inclosed;—
Who buys his goods for cash on spot,
And buys things needed,—borrows not;—
Who rises at the break of day,
And fresh to labor speeds away;—
Who rests on Sunday, heart and mind,
And feeds on heavenly love divine;—
Rejoices much in order, cleanliness,
In house and yard and all his premises;—
In greed and fraud takes no delight;—
Who rears his sons in wisdom's light;—
Who does his work at stated hours,
And thus evades misfortune's sorrows;—
Who faithful is in least and most;—
In word and deed is always just;—
It shall be well with him at home, without,
In going in and coming out.

GLEANINGS IN BEE CULTURE. A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS. ILLUSTRATED SEMI-MONTHLY 36 PAGES 7x10 $1.00 PER YEAR.

Seest thou a man diligent in his business? he shall stand before kings; he shall not stand before mean men.—PR. 22:29.

H. P. LANGDON, of East Constable, N. Y., has the largest house-apiary in the world. It is 11 x 100 feet. It is well equipped according to the latest ideas, and is a success.

IF R. L. Taylor and the others fellows don't keep still, we shall be on their side of the fence. We are talking about self-hivers versus queen-traps, as discussed recently in the *Review*.

OUR winter losses at the Home of the Honey-bees have increased from 20 to about 35 per cent; and if this beautiful spring weather will only hold out a little longer, our wintering and springing troubles will have ended, for there are lots of hatching brood all over the apiary.

THE *Bee-keepers' Enterprise* is the title of a new monthly, to be issued May 15, by Burton L. Sage, who is to be its editor and proprietor, at New Haven, Ct. If we can judge any thing by the prospectus sent out, it is going to rival in appearance any of the bee-journals now published.

WHEN we said of the *Progressive Bee-keeper* in our last issue, page 273, that we had no doubt but that it would be "as successfully conducted as before," we had reference to its editorials and general good selection of matter, and not to its business management whatever that may have been. We make this statement, as the Leahy Manufacturing Co. misunderstood the purport of our editorial.

TYPES do queer things; and not the worst is pulling up sometimes while on the press, and spoiling some more type. Well, a lot of 'em, by mutual agreement, pulled up on the reverse side of this form all at once, and "sot down" on the horse's head that Rambler tells about as having such a funny expression while she was sitting down. That "funny expression" was just "too cute." Our readers will have to supply in imagination what the lines fail to supply.

IF you are going to paint your honey-house, barn, or shop, use Venetian red and genuine French ocher, mixed about half and half. Don't try to get too cheap an ocher. Something worth between 6 and 7 cts. per lb. would be about right. The mixture of ocher and Venetian red makes a very nice bright red tint—a color that will not fade nor turn brown. Of course, two coats should be used. This color would be hardly suitable for painting hives; but for such use, as light a colored paint as possible should be used.

LATEST reports show that winter losses from colonies outdoors will not be as great as has been anticipated. Indeed, in most sections the mortality will be no greater than usual; while those colonies in the cellar fared much better than in former winters. The beautiful spring weather is a rather pleasant surprise to most of us. It means lots of brood, and this, of course, means a big working force when the honey harvest opens up.

"OUTDOORS" is a book of 80 pp., nicely bound and printed, covering the subject of yachting, cycling, football, baseball, horsemanship, rowing, and canoeing. If you wish to see what it is, send five two-cent stamps to the Pope Manufacturing Co., Boston, Mass., and you will be pleased. This may sound a little like gratuitous advertising; but it is preaching the *gospel of outdoors*, and we are glad to encourage any such noble enterprise. We feel also as if these sports had a place right alongside of our favorite pursuit—for by some our industry is regarded as a pastime.

IT seems that the *Evening News*, of Washington, D. C., has been offering prizes of a bicycle to agents who secure 100 new subscribers. Master Frank Benton was the one to secure the first wheel, and he did it in 72 hours, and is now at work securing another for his sister. As he is a boy only eight years old, the feat is quite remarkable. But then, he is unusually bright, and, if his parents will pardon us, handsome. Master Ralph will be better known if we state that he is the youngest member of the N. A. B. K. A., and is the son of Frank Benton, now in the Department of Agriculture, Washington, D. C. We are always glad to know that anybody has come in possession of a wheel, for we know that he is adding greatly to the joys of life, besides driving away disease and perhaps escaping premature death. This remark applies not especially to boys, but to indoor middle-aged people, who get very little fresh air.

PRESENT indications seem to show that this season *springing* is not going to be so bad as *wintering*, although in average seasons these conditions are reversed. Our spring weather so far has been most beautiful. So far as we can ascertain from reports, the same conditions have existed nearly everywhere. Colonies that were very weak, and would, in ordinary springs, have spring-dwindled to nothing, are beginning to build up. Young bees are beginning to hatch, as the result of the warm balmy weather, and natural pollen is coming in. No one knows what the mortality of wintering and springing would have been with our usual cold and wet Aprils. As it is, the cellar-wintered colonies, coming out into such beautiful weather, will build up amazingly fast; and those that have been wintered outdoors, even though they have dwindled down, will make good use of the weather.

IN this issue we start a new department under the heading "Trade Notes." It follows Editorials; and hereafter, when there is appropriate material on hand, it will be found under that head. We intend that this department shall keep track of and describe all recent useful improvements, whether of our own or of others; and we shall be obliged to manufacturers and others if they will furnish us material for this department. So many devices, ideas, and methods that have been submitted to us in the past have been found to be either worthless or abandoned, that our "editorial we" will have to sit on the judgment-seat. That functionary will endeavor to be as impartial as possible; and if he considers the device or idea not worth noticing, he will not describe it, as our subscribers will not care to wade through descriptions of no practical value.

THE MAINE STATE BEE-HIVE.

SEVERAL have written us, furnishing us facts in regard to the Maine State bee-hive, by R. S. Torrey, as mentioned on p. 273. It seems that it was but a slight improvement over the old box hive, and very much the same shape. Its inventor was the most prominent bee-keeper and supply-dealer in the State before the introduction of the Langstroth hive and system in 1870. Along about that time, the *American Bee Journal* began to be taken, and progressive ideas, including father Langstroth's hives, shoved the Maine State hive to the wall. Mr. Torrey was also a seller of secrets for "making honey as good as bees' honey."

SEALED COVERS VS. ABSORBING CUSHIONS FOR OUTDOOR WINTERING.

ON page 273 we asked our subscribers to "overwhelm" us with reports showing the comparative tests between colonies under sealed covers packed in chaff, and colonies packed in chaff without the sealed cover, or on the absorbing-cushion plan. Well, we did not get deluged nor even overwhelmed; but a few reports came in that were so conflicting that we are unable to tell which way the wind blows. Some are greatly pleased with the sealed cover, and will use no other method in the future. Others are decidedly disgusted, and somewhat blame us for giving as much prominence to the idea as we have; others can detect no difference between the two methods. In our own apiary, we are not entirely decided, although the advantage seems a little in favor of the absorbing cushion. It is proper to remark, however, that our sealed-cover colonies, although nominally so, were not so actually. They were prepared so late in the season, that little or no sealing was done. The sealing, if it is done at all, *must* be done by the bees before cold weather sets in, along in September or in the early part of October.

As to the position of the other bee-journals, the editor of the *Nebraska Bee-keeper* reports bad results for sealed covers. The editor of the *Bee-keepers' Guide*, on the other hand, publishes a splendid testimonial for it, saying that he has used the plan for the past 20 years, and that he has always wintered successfully.

Now is *the* time to send in reports, when the discussion is fairly before us, and our interest, if we ever had any, has not died out. Don't be afraid to *deluge* us, for the truth is what we are after, and we can get it only by comparative tests in *many* and *varied* localities.

Later.—Since writing the above, reports are coming in, though a little tardily, more in the "overwhelming" style. The great mass of them show that there is no difference between colonies under sealed covers protected by packing, and similar colonies equally protected under absorbing cushions. If these set forth the correct status of the case, it will account for the conflicting reports mentioned above; for we know that colonies, under precisely the same conditions, in the same apiary, will winter very differently. If a colony happened to be under a sealed cover, and died, and another under an absorbing cushion, and lived, it would prove nothing. We are not entirely satisfied yet, and desire to be deluged with reports. Let them pour in by the hundreds.

Still later.—Hold on! Another big pile of reports are coming in, and the evidence seems to be turning more in favor of the absorbents. At this rate the sealed covers will have another "black eye."

J. A. BUCHANAN, AND THE CHARGES OF ADULTERATION AGAINST HIM.

SINCE the matter was written with regard to Mr. Buchanan, on page 275, we have received a letter from him which materially modifies the situation: but as the *Evening Star*, published at Steubenville, Ohio, came out with bold headlines, to the effect that J. A. Buchanan, of Holliday's Cove, W. Va. (a suburb of Steubenville, just across the river), had not only adulterated honey, but plead guilty, it seemed to us that it knew whereof it spoke, although at the time, as our readers will remember, we could scarcely credit the report; and before we could pass judgment we desired more light, not only from Mr. Buchanan, but from others. In response to this, Mr. Buchanan sent us a long letter, a short extract from which we here give:

Mr. Root: I have your letter of the 28th inst., making inquiry as to my innocence or guilt of adulterating honey. No matter how it looks to you or to any others, I am innocent of this charge; and when I was called before Justice Trainer he asked me if I plead guilty or not. I told him I would prove to him that we did not adulterate our honey, and could easily prove this; and I asked whether if I would do so it would end the matter. He said it would not avail me any thing, as the law holds the party who sells the goods, and the seller must pay the damage or fine, even if he is not guilty; and at this juncture the inspector's attorney came in and stated the same. Then I remarked that, as I must be fined in any case, what would be the wisdom of standing a trial? They both said it would only add an additional cost, and nothing to my advantage. Then I said that I might as well pay the fine and end the matter for the time. It might be that these men's opinion was given that they might get their fees without any labor on the case, and that it had been better for me to have had the case tried at the time. I never sued any one, nor have I ever been sued in my life. I am 52 years old; never quarreled with a man, nor had one quarrelsome word with a living man. I have talked plainly with those who have wronged me. But I am not posted in law, from not having any thing to do with it, and possibly I should have stood a trial, but was governed by what these men said. J. A. BUCHANAN.
Holliday's Cove, W. Va., Mar. 30.

As nearly as we can make out, there has been "bad blood" somewhere. If the editor of the *Evening Star* is not malicious, some of the editorials in his paper in regard to this matter, which have appeared lately, begin to *look* that way; at all events, we shall place a charitable construction on the letter above—at least for the present.

Although Mr. Buchanan paid the fine, it does not necessarily follow that he plead guilty to the serious charge of adulterating honey, as alleged by the *Star*. He did what many another of us *might* have done — he paid the fine to end the matter. But here, again, like many another, he made a serious mistake, because the payment of the fine was, in a sense, a confession that he had adulterated. It would have been far better for him to have stood a trial. If his statements are true, as we have reason to think they are, he has been the victim of a certain commission house. Indeed, we have sold honey ourselves which was afterward pronounced adulterated, by consumers. We made the mistake of selling the honey on the reputation of the seller, and another mistake in not testing it as we now do honey before it goes out. Whether the honey in question was adulterated or not, we can not now say; but we certainly think, in view of the sure and simple ways of detecting adulteration, that no prominent honey-buyers should be "taken in" by any such bogus goods. Let every lot be tasted—not necessarily every can in a carload of honey, but here and there a can, so as to get a fair average of the whole lot. If there is any doubt about it, let it be subjected to the alcohol test, as given in our last issue, on p. 275. It might be well, also, if further tests then appear to show adulteration, to submit a pound or two to the State Chemist, who, we understand, is authorized to analyze and report, free of charge.

Later.—Since writing the above we have received another letter from Mr. Buchanan, furnishing us such evidence and testimony as to leave no doubt in our mind that he is entirely innocent of the charge of adulterating; and so far as pleading guilty—that seems to have originated with the *Evening Star*. As we said in our editorial of April 1, we had hitherto known Mr. B. as a reliable and honest man, and we are very glad indeed to have additional assurance to the effect that he has been so all along. We are sorry that we said as much as we did in our issue for April 1; but we did not think it possible that the editor of the *Evening Star*, or any editor, would *dare* to say a man had "pleaded guilty" unless it were true.

TRADE NOTES.

THE NEW CRANE SMOKER.

As promised in our last issue, we herewith present engravings of the new implement. It is the invention of Mr. J. E. Crane, of Middlebury, Vt., with some improvements of our own. He has already secured a caveat, and, we understand, proposes to take out letters-patent.

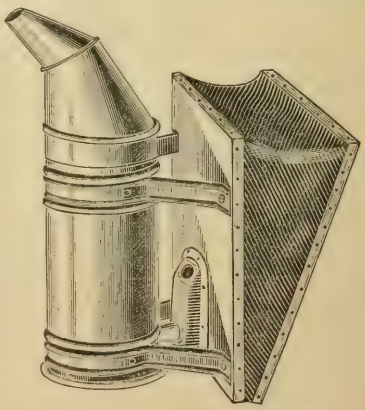
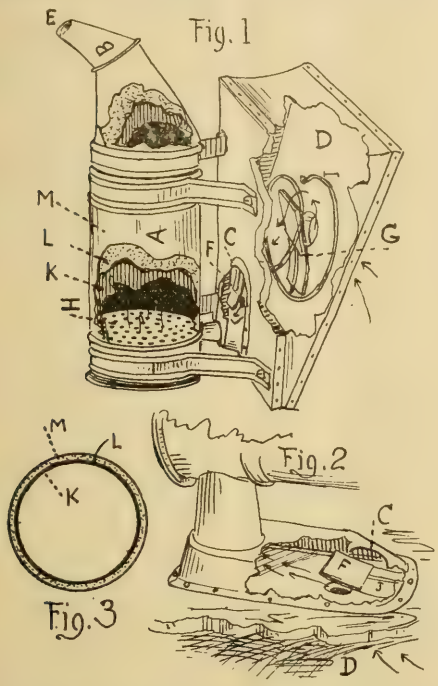


FIG. 4.—NEW CRANE SMOKER.

Fig. 4 is the outward appearance of the new smoker, and shows that it is beautiful in design, and handsomely and well made. Indeed, it is the most expensive in construction of any smoker ever before put out. The bellows, to begin with, is made ample and substantial, having an inside spiral spring, J, Fig. 1. These springs have been carefully tested; and on an extensive test, with Clark smokers, we find them to be, to coin a word, unbreakable, and elastic. The boards are nicely finished on the outer surface, and the valves are adjusted with great care, each one being inspected before going out.

So far, the smoker presents no new ideas. The particular feature which Mr. Crane claims as his invention is the check-valve F, in combination with C, Fig. 2, by which smoke is prevented from going into the bellows, and by which a strong concentrated blast is secured. Its details of construction are shown in Figs. 1 and 2. The particular valve is shown in F, Fig. 2. A stamped canal, C, covers the whole, and is perforated at C. A pressure of the bel-

lows opens the valve F, and throws it tightly against the hole C, leaving no exit for the air to escape through except the smoker-cup. The moment the pressure is released from the bellows, F drops down into position, closing the hole and leaving ventilation through C. Thus it is that smoke can not get into the bellows,



and thus it is that the full power of the bellows is fully conserved; and so strong is the blast, that, no matter how much fuel may be crammed into the cup A, the air has *got* to go through. In other smokers of this class, there is either no tube between the bellows and fire-cup, or else, if there is one, it has a sort of ventilating hole that soon becomes clogged up in consequence of the air passing back through the bellows. In the absence of a connecting tube, the blast is necessarily very much weakened when the smoker-cup is much crammed with fuel, because not all of the air is *compelled* to go through the cup.

Another feature is, that the smoker-cup and nozzle, up to the ring B, in Fig. 1, is lined with asbestos, L, and sheet steel, K, Figs. 2 and 3. The object of this is to prevent the bright tin surfaces from becoming too hot, and radiating heat. This does away with the use of projecting shields, that are in the way, and more or less unsightly. This asbestos and steel lining also prevent the inside of the cup from becoming too thickly coated with creosote; and it is needless to say, that the smoker will last longer thus lined, and that it will be much easier to remove and to adjust the cone B. The grate, I, Fig. 1, is secured in a bead near the bottom of the cup, and instead of having large perforations that let hot coals drop through more or less, the holes are very small—a trifle larger than that which would be made by a darning-needle through a piece of paper. In the old-style smokers, the grate-holes must be large to let the weak blast through.

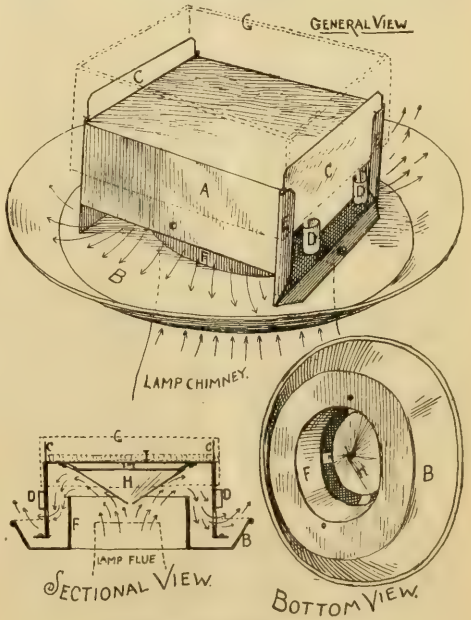
The fire-cup itself is fastened to the bellows by means of very neat and strong folded-tin legs. The cup can at any time be released by means of four screws; so also, in a similar manner, can the canal covering the special check-valve.

The new smoker presents also still another feature. The bellows is reversed, the large end being upward. But there would be no advantage in reversing the bellows were it not for the fact that the nozzle is *curved*, as shown in Figs. 1 and 4. This makes it unnecessary to twist the hand out of the natural and easy position. By always holding the smoker in an upright position, a stream of smoke may be sent at right angles to the plane of the bellows, without disturbing the contents of the fire-cup, and this will avoid throwing sparks. A little practice in manipulating this smoker will show that this combination of bellows and curved snout is the thing. We will suppose that the smoker is standing on the ground. The hand grasps it in the natural way, brings the nozzle above the edge of the hive, and a couple of whiffs, without twisting the hand in the least, sends a stream of smoke over the frames.

This smoker has been submitted, in its less perfect form, to Dr. Miller and others. The doctor was greatly pleased with it, as were also the others.

TAYLOR'S COMB-LEVELER DEVICE.

Some weeks ago we received a letter from B. Taylor, mentioning the fact that he had just invented a device for reducing the depth of cells in partially drawn-out sections. All comb-honey producers have what are called, at the end of the season, unfinished sections. Some of these contain honey, and others only just the pieces of drawn-out foundation. It has been generally admitted, that a certain number of these unfinished sections can be used advantageously, in the way of bait, to start the bees



TAYLOR'S COMB-LEVELER.

into the sections; but it has been found advisable not to use many such. Although the bees will fill and cap them over, the finished product is greatly inferior to those combs made direct from sheets of comb foundation. The problem

with some bee-keepers has been to reduce the depth of the cell-wall in these unfinished combs, back to the original foundation; but no practical way has been devised until lately.

Immediately after receiving the letter from Mr. Taylor, we asked him to send on a sample of his device as soon as he had it perfected. He did so, and herewith we give engravings showing different views of the same.

It is simply an ordinary shallow pan, having a square box made of iron, mounted in the same (see sectional view). The inside dimensions of this box are just a little smaller than the inside dimensions of the sections. By referring to the bottom and sectional view, it will be seen that the top plate I is designed, when hot, to come in contact with the ends of the cells. To heat this plate I, a lamp-chimney, as shown in the sectional view, is introduced into the under side of the device at F, the implement itself being supported by a box of the right height, having a hole in the top through which the lamp-chimney projects. The cone, H, shown in the bottom and sectional views, disperses the heat so that the plate I will remain equally hot at all points.

The operation of reducing the cell-walls in partly finished sections is, to place one over the the square metallic box, as it were (see dotted lines C and G in the general view), allowing the combs to come in contact with the heated plate. The ends of the cells melt rapidly, and the wax refuse runs down the sides A, and is caught in the bottom of the pan at B. The stops D D prevent the cell-walls from being melted down too far: and as the plates C C slide in the grooves E E, the stops D D may be regulated to suit the width of the section, so as to give the required depth to the comb.

Although we have never tried it, we presume it is a fact that the bees will build out these combs, reduced to foundation again, as rapidly and perfectly as they build from regular foundation; and probably no one could detect, after the combs were finished and capped over, those that were built from leveled-down comb, and those from foundation.

In accordance with Mr. Taylor's request, we gave the device a careful test, and found it melted down the cell-walls, leaving the ends clean and sharp, without any ragged edges; but while the operation seems to be a little slow, quite likely greater speed could be obtained with a little practice.

Just how far this machine may prove to be practical, we can not say; but we should be very glad to receive reports from those who have given it a thorough trial on quite an extensive scale. The only question that remains in our mind is, that it might be cheaper to use new sections and new foundation rather than to take some sections that might be soiled from bee-travel, and level them down. Over against this, it may be said that the unfinished sections are waste capital that are of no use to bee-keepers; and if, at a slight additional expense, they could be used over again, something will be saved.

We have just been permitted to examine into the details of H. P. Langdon's device for preventing swarming — not only for preventing swarms, but materially increasing the honey crop. We are not yet at liberty to make public the details, but we would simply state here that our friend Langdon has a plan that *promises* better than any thing we have ever seen. The system has already been indorsed by a number of the leading lights in apiculture to whom the plan has been submitted confidentially. Some even go so far as to think that the invention will rival in importance that of the extractor and the comb-foundation machine. While we do not hold so hopeful a view as this, we believe that most bee-keepers will want to try it as soon as the inventor is ready to have the details published.

SPECIAL NOTICES.

ST. MARTIN RHUBARB-PLANTS.

Good healthy plants, from seeds planted a year ago, 25 cts. each; $2.00 per dozen. If wanted by mail, add 5 cts. each for postage.

SECOND-HAND WOOD-TURNING LATHE.

We have a bargain to offer in a wood-turning lathe. It is similar to Barnes' No. 3 lathe, without legs, which sells for $20.00. It is some heavier, has cone pulley for different speeds, and has been fitted up practically as good as new. It is now at Mayville, Mich., where we sold it to a party who wanted a lathe for foot-power. He found this too heavy for that use, but considers it a rare bargain for any one with steam power to run it. We will sell it for $12.00.

STOWEL'S EVERGREEN SEED CORN.

We have obtained from C. S. Clark, mentioned on page 276 of our last issue, the man who furnishes D. Cummins with that extra nice corn for his canning-factory, two bushels of seed. The price will be 5 cts. per ½-pint; 15 cts. per quart, or 75 cts. per peck. If wanted by mail, add at the rate of 12 cts. per quart for postage. This strain of Stowel's Evergreen is certainly superior to any thing in the way of green corn we have ever before got hold of.

THE PALMER RASPBERRY.

We have been for years testing the new raspberries as they came out. Two years ago we bought 500 plants of the Palmer raspberry; and last season it gave us the first crop, with which we were so much pleased that we propose to drop all other varieties. We buried some of the tips in the fall, in order to extend our plantation, but find we can spare perhaps a thousand or more nice strong plants. Price, per 10, 40 cts.; 100, $3.00. If wanted by mail, add 2 cts. each for postage. These plants were grown on our rich market-gardening ground, and are, therefore, extra large and strong.

OUR MAMMOTH SWEET CORN.

I am sorry to say that our seed of the above variety, the present season, is not germinating just at present as it ought to do; and on that account we have, under the circumstances, decided to fill orders with Stowel's Evergreen—the kind used by the Cummins canning-factory, mentioned elsewhere, in place of the Mammoth. Of course, I can purchase some more seed of the Late Mammoth, of some of the various seedsmen; but if I do so, I should not feel sure it would equal our own strain of Late Mammoth we have had for so many years. In fact, I have sometimes tried purchasing Late Mammoth when we were sold out; but it was never as rich and sweet as our own strain. From what we know of Stowell's Evergreen, we think it will fill the bill nearer than any other variety; and it also has the merit of not getting too old for table use as soon as the Mammoth does.

LAWN-MOWERS.

The time is at hand when the grass on our lawns and bee-yards will need trimming. You can do this with nothing more satisfactory than a lawn-mower. On the inside of last cover you will find the two mowers we have sold for a number of years, but at further reduced prices. There is no better mower built than the Globe; yet we sell it at the ridiculously low price of $5.00 for the 18-inch, and from that down to $4.00 for the 10-inch. The Young America is an excellent one for a single driver, and the price at which we offer them does not cover cost, but we must sell them. They were bought as a bankrupt stock in the first place, at a very low figure; and yet, to close out the last of them, we will sell them at retail, even below that. Those who can use a quantity of either style will do well to write for prices.

SPRAYING-OUTFIT.

We call the attention of our readers who are interested, to the two pages in this issue devoted to spraying-outfits. Instead of the pipe extension shown, some of our readers prefer extra length of hose, and the nozzle attached to a pole. This arrangement costs a little more; but for those who prefer it we will furnish extra half-inch Diamond hose at 15 cts. per foot; by mail, 5 cts. extra. Full directions for preparing the spraying-solutions, and applying them, accompany each pump. Do not spray when the trees are in full bloom, for that is too soon to do the work intended (to destroy the insect pests); but it will poison the bees, just what you do *not* intend. The right time is after the petals have fallen. In this connection you will do well to read the article by Prof. Cook, "Bees as Fertilizers," which appeared in GLEANINGS for Sept. 15, 1891. We have this reprinted in a leaflet for general distribution, and we furnish them at the following rate, which barely covers cost: 25 for 5c; 200 for 25c; 500 for 50c, or $1.00 per 1000, postpaid. There is no need of a conflict between bee-men and fruit-men, but, rather, the closest friendship, if each understands the facts fully and acts upon them.

SEWING-MACHINES.

On page opposite 326 you will find a list of sewing-machines. The manufacturers of these machines have recently put out a machine styled the Columbian, warranted for 10 years, and of the highest grade throughout. We sell these at the price under the head of Hartford, in the table. We recently shipped one of these to a customer in Michigan, who writes, after receiving it, as follows:

The sewing-machine purchased of you is just splendid. Mrs. B. likes it very much. It runs nicely, and does good work. There are some more of the boys here who will want machines as soon as they have the money to spare. They have been in the habit of buying on the weekly-installment plan. Some pay $65.00 for a machine no better than this one. Send me several circulars of machines.

Northville, Mich., April 8. CHAS. BIERY.

We have sold over four hundred machines made by this company, and they give almost universal satisfaction. There have been a few complaints, all of which have been adjusted satisfactorily, so far as we know. The company are so confident that they will give satisfaction, that they agree to pay the freight both ways, and refund the price if they are not as represented, or give satisfaction to the purchaser.

OUR EARLIEST TOMATOES.

I believe the Early Ruby has been considered the earliest; but it is of such irregular shape and small size nobody wants very many of them. Vaughn's Earliest of All is said to be a little earlier than the Ruby, but also a little more irregular in shape. The Early Red Apple is as good shaped a tomato as any, and nearly as early; but it is so small nobody wants many after the larger kinds, like the Champion and Beauty, are on the market. We are testing all of these kinds; and as we have more plants than we care for, we propose to divide with any, who may want them, at the usual price. We have about 400 Ruby plants, and 100 each of Earliest of All and Red Apple. We are also testing two of Livingston's new tomatoes—the Dwarf Aristocrat and the Buckeye State. We have about 100 plants each of the above. Price of any of above, postpaid, 20c for 10 while they last. The Aristocrat is much like the Dwarf Champion, only the color of the fruit is said to be still brighter. They are so dwarf that they may be planted 3 x 3 feet, or still closer in small gardens. It will also be, perhaps, the best tomato to grow in plant-beds, because the sash will not need to be raised very much to clear its foliage. Livingston pronounces the Buckeye State the largest-fruited variety they have ever sent out; and, unlike the Mikado and Henderson's Ponderosa, this tomato is said to be as smooth and handsome as Livingston's Beauty. This is what Livingston claims. I have had no experience with any of the four kinds except the Red Apple and the Ruby.

FREEMAN POTATOES SOLD OUT.

And the worst of it is, everybody is wanting them. If any of the friends have any that they will sell, will they please tell us how many they have and what they want for them?

Later.—April 12.—The call for Freeman potatoes, not only eyes but pounds by mail, and pecks and bushels and barrels by express and freight, are the main topic just now; and, by the way, I have myself been a little shortsighted, for I did not know that the Freeman potato is almost or quite as early as the Early Ohio. This, added to the fact that it is ever so much more productive, and of a quality almost equal to our old Snowflake, explains why everybody wants it. An hour or two ago a good friend wrote that he had ten or eleven bushels to spare, and wanted to know what we would give. I sent him a telegram, telling him to send them all, at his own price. This may be a little reckless; but bee-men are generally reasonable and fair. I hope we shall be able to keep filling mail orders (even if we don't do any thing more), at the prices given in our last issue.

Now, friends, here is something that I have just studied up, that is going to make business for a great lot of us. In a good many localities, two crops can be raised in a season. The way our friends in Virginia and Tennessee work it is to leave the new potatoes in the sun until they get a little sunburnt; then cover them with earth; and as soon as they begin to sprout, have your field all prepared; cut your potatoes to one or two eyes, and plant. If you don't put in any thing but a sprouted potato, you will have a perfect stand; and if you can manage to escape the late frosts, you will have potatoes that will keep over winter very much better than those raised earlier in the season. Perhaps some of the friends who have been doing this can give us some additional hints in the matter. Yes, there is going to be "big money" in the Freeman potatoes for seed, for some little time yet. Oh, yes! the Freeman has one little fault—the potatoes are rather more spread out in the hill than the Early Ohio and some others; therefore it is a little more work to dig them.

TERRY'S POTATO BOOK—A NEW EDITION.

Perhaps it may interest many of the friends to know that T. B. Terry is hard at work re-writing the A B C of Potato Culture, for the whole 500 of the first edition is just about exhausted. Well, I have just been reading the pages of the first form; and if they could be put before the farmers and gardeners of America, before they get to work plowing and planting potatoes, it seems to me it would be worth—well, a big lot. I had thought some of putting these valuable chapters in GLEANINGS; but our pages are already crowded in every department, and a great part of our readers care little or nothing about plowing clover under, or about planting potatoes; therefore I have decided that it would be best to offer these advance sheets only to those who want them. How shall we do it? I think the best plan will be to manage as we have with our other text-books on agriculture while they were coming out. Send us 40 cents for these first pages, and we will mail you other advance sheets as fast as they are printed, and the whole book when it is ready. Terry's revised ideas up to the present time, on plowing and preparing the ground, are worth several dollars to me, to say nothing of the rest of the book. There are certain problems in regard to working the soil that I have been debating on more or less ever since I owned a plow and a good team. Since friend Terry wrote the first edition of the book, he has talked at the different institutes with some of the very best farmers in the United States; he has heard all these things discussed pro and con, by the best and most intelligent tillers of the soil, not only here in Ohio, but throughout a great number of the most progressive States in the Union. Now he sits down and gives us his views, after summing up all the suggestions and talks that have come before him. May be you think I am a little prejudiced in favor of friend Terry's teachings. Perhaps I am. Huber and I recently paid him a visit, walked all over his farm, and went through his toolhouse, etc. I propose to tell you of it in our next issue. I think you will enjoy reading the advance pages of this book, and I know very well I shall enjoy seeing them go into the mailbags—not alone for the pay I get, for I have already contemplated furnishing them without pay; and if I knew who wanted them and who didn't, I don't know but I would try it. Then, again, if I gave away the advance pages, who would buy the book? and where would my pay come from to meet the expense of making the pictures, setting the type, etc.?

Improved Force and Spray Pumps.

Fig. 1.

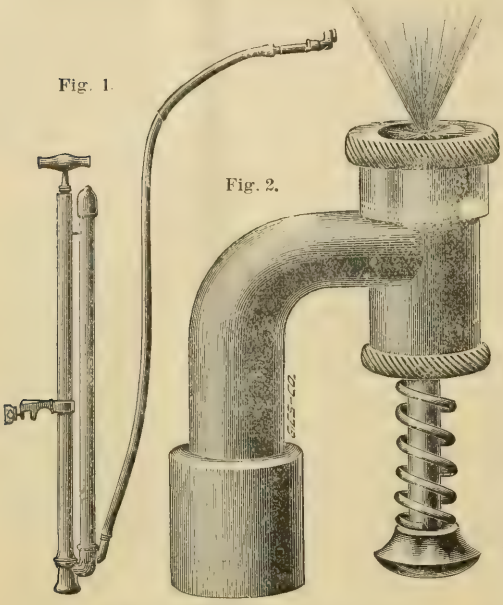


Fig. 2.

Something superior to those formerly offered, at Greatly Reduced Prices.

It is generally admitted, that, excepting in very rare cases, it is impossible to have perfect fruit or foliage in these days, nor any at all worth mentioning, unless the trees are watched, and the insect-enemies that make all the mischief are destroyed at just the right time. That time is very near at hand; and the prudent man, unless he is already provided with the most approved apparatus for destroying the insect-pests is on the lookout, and preparing to secure it. There are a great many spraying-outfits of various kinds sold, varying in cost and efficiency. Some are good, and others not so good. We have carefully examined different outfits, and we believe the line we offer here is the best obtainable for the price. These, of course, are not large enough for fruit specialists who have many acres to spray; but for the ordinary grower who wants something effective, and within the reach of his pocket-book, nothing superior can be found for anywhere near the price at which we sell these.

Myers Bucket Brass Spray-Pump.

This is the one we offered first last season, but greatly improved. Fig. 1 shows the general appearance of the pump, which is made almost entirely of brass, with rubber-ball valves, and 4 feet of ½-inch rubber hose. Fig. 2 shows the vermorel spray nozzle, with degorger, which is new on the pump this year. This degorger is used to remove an obstruction that may get into the small hole which forms the spray, thus making it unnecessary to unscrew the tip except in rare cases. Two tips are furnished with each pump, one for very fine spray and the other some coarser, but very much finer than a spray made with a perforated nozzle. It is so fine that it floats up like a cloud. By this feature the same amount of liquid will go at least four times as far, and does more effective work than with a perforated spray nozzle. The pump differs in construction from the old-line pumps of this class, and is arranged so that the heavy work is done on the down stroke of the plunger and nothing on the up. The effect of this operation, while pumping, is to hold the pump down, and it is not necessary to use a foot-rest. Thus it is very easy to operate, and has extraordinary power. It is provided with a large air-chamber, and has a valve at the bottom between the cylinder and the air-chamber, whereby the pressure is held uniformly in the air-chamber and on the hose, so that the nozzle throws a constant, continuous, even spray all the time, and is not affected by the movements of the plunger, and the operator is enabled to keep a constant pressure on the nozzle of from 50 to 100 lbs. with very ordinary exertion. It is arranged

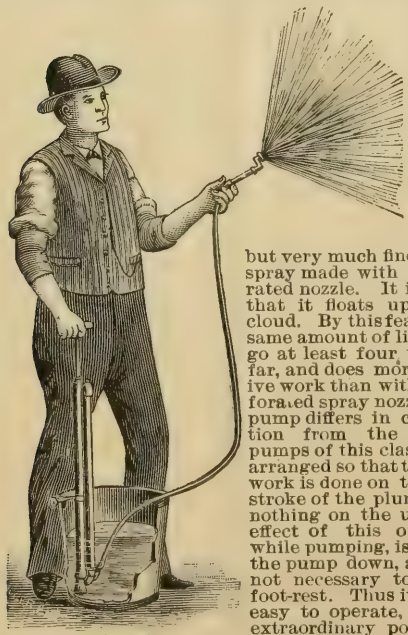
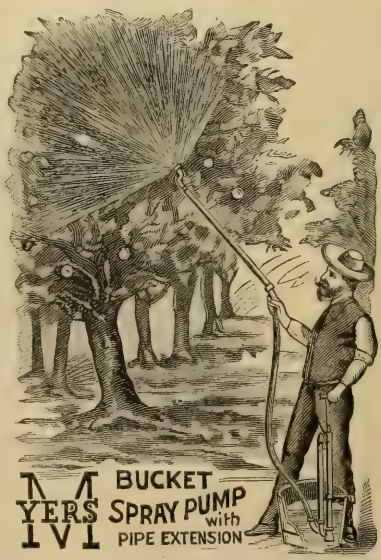
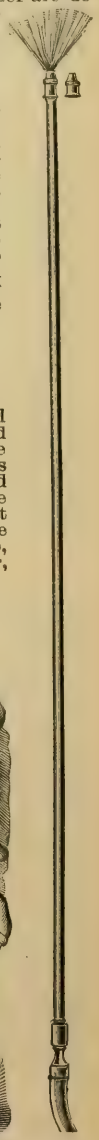


Fig. 3.





Figs. 4 and 5.

so it discharges a fine jet in the bottom of the bucket, to keep the solution thoroughly mixed and agitated —a feature peculiar to this pump. By simply unscrewing the spray nozzle the pump is ready to throw a stream which is very effective in washing buggies, windows, putting out fires, or arresting swarms of bees.

Fig. 3 shows the method of operating. In this way you can not throw a spray more than 15 feet high, so that, on high trees, you can not do effective work without the pipe extension shown in Figs. 4 and 5. By means of this you are enabled to reach all parts of the tree easily. This pipe extension is simply a piece of common ¾-in. gas-pipe, 8 feet long, with coupling, which you may be able to get at your hardware store. If not, we can furnish it for 50 cts. The pump complete, with hose and vermorel nozzle, as shown in Figs. 1 and 2, with two tips, weighs 5 lbs., and will be furnished for $4.50 net each. Eight-foot pipe extension included for $5.00. We will sell 3 pumps, without pipe extension, for $10.50; 6 for $20.00. Pipe extension, in quantities of 3 or more, at 40c each. We can mail this pump in two packages for 90c postage.

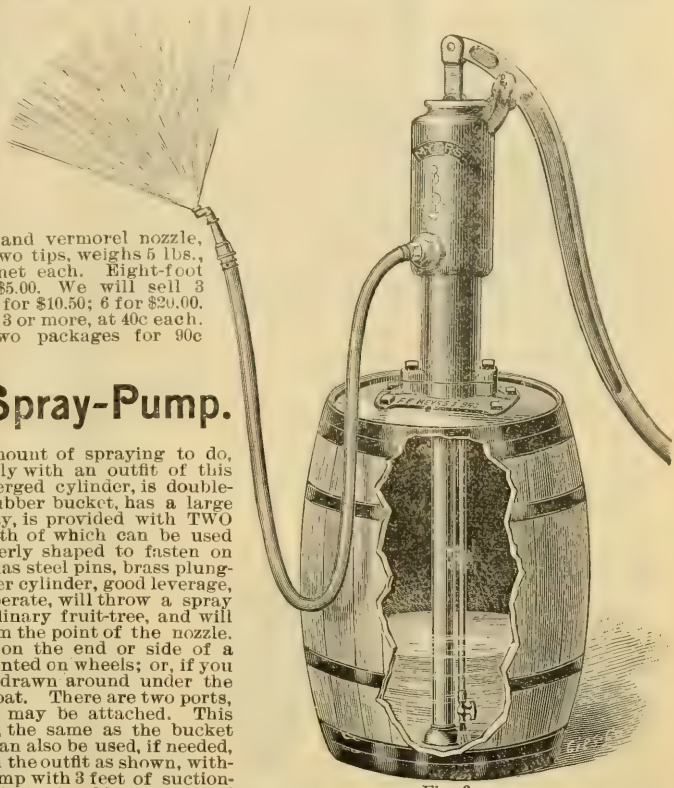


Fig. 6.

Myers Barrel Spray-Pump.

Where you have a larger amount of spraying to do, you can accomplish it more easily with an outfit of this kind. It has our patent submerged cylinder, is double-acting, has patent expansion rubber bucket, has a large air-chamber to cushion the spray, is provided with TWO DISCHARGE PORTS, one or both of which can be used for spraying. The base is properly shaped to fasten on the staves or head of a barrel, has steel pins, brass plunger cylinder, and brass-lined lower cylinder, good leverage, is very powerful, and easy to operate, will throw a spray as fine as mist over any ordinary fruit-tree, and will throw a solid stream 60 feet from the point of the nozzle.

This can be mounted either on the end or side of a barrel. The barrel may be mounted on wheels; or, if you have a horse to spare, it can be drawn around under the trees in a wagon or on a stoneboat. There are two ports, to one or both of which a hose may be attached. This outfit includes vermorel nozzle, the same as the bucket pump, and the pipe extension can also be used, if needed, for high trees. We can furnish the outfit as shown, without the barrel, consisting of pump with 3 feet of suction-pipe, strainer, and agitator, 5 feet of rubber hose and vemorel nozzle, with two extra tips, for $6.50; or the same with two 5-foot lengths of hose and two nozzles, for $7.50; 8-foot extension, at 50c extra. We have extra spray nozzles without the degorger, and with attachments to fit ordinary ¾-inch garden hose, at 60c each; by mail, 75c.

In this connection we would call attention to the Whitman and Smith pumps listed on page 12 of our catalogue, either of which we can furnish at prices listed there. The Smith pump especially is well adapted for spraying. It is strong and serviceable for a tin pump, and we sell a good many of them. To save you looking it up we quote the prices here. Each, $1.00; 3 for $2.80; 1 doz.; $10.00; 2 doz., $18.00; 36 for $25, 72 for $45.00; or 144 for $85.00 While it is strong and serviceable, we do not like the principles on which it works as well as the

Common Sense Spray-Pump.

The adjoining cut shows its construction and manner of working. The piston, or plunger, is worked with a lever handle, giving greater force for the same power exerted. The plunger-tube is shorter, and larger in diameter, than the ordinary pump. If the water comes over the top it spills right into the pail again. It has an air-chamber, with valve, giving a continuous stream or spray. It has a short rubber hose to give direction to the stream or spray, without moving the pump. It has also an adjustable nozzle for stream or spray. We offered this pump for the first time last season, and they gave general satisfaction. Their only fault is they are not made very strong, but if judiciously handled will do good work for a long time. We are able to offer them this year for only 60c each, or $1.00 postpaid. In quantities the price will be $6.00 per doz.; 3 doz. for $16.00. Larger quantities quoted on application.

Gould's Handy Knapsack Spray-Pump.

There may be some who will prefer a knapsack spray-pump that may be carried on the back. We are prepared to furnish one of the best of this kind—Gould's Handy Knapsack Spray-pump. The pump is made entirely of brass and copper, with rubber-ball valves and metal plunger. The reservoir is made of heavy copper, and will hold about 5 gals. of liquid. We furnish each pump with 3½ ft. of ⅜-inch discharge hose, and "Masson" Lance nozzle. Price of Handy Knapsack Sprayer complete, $13.50.

A. I. ROOT, MEDINA, OHIO.

We are on the

LOOKOUT

For a few more customers to try our **Five-banded Golden Italian Queens** (ready in May). Here is the way our trade has grown: In 1890 we sold 187 queens; in 1891 we sold 545; and in 1892 we sold 1122. Is not that a healthy growth? We **guarantee entire satisfaction**, or return your money. We have no low-priced queens, but if you try one of our queens you will think them **cheap.**

"What will you charge for 25 queens? I want them for my neighbors who were so much pleased with the ones you sent."

Mt. Pleasant, Ia. W. F. BRUNING.

That is the way we give satisfaction.

One queen, warranted purely mated, in May, $1.25; later, $1.00. Money-order office, Cable, Ill.

Reference, A. I. Root.

S. F. & I. Trego,

Swedona, = = = Ill.

Please mention this paper.

MY FINE ITALIAN QUEENS WILL BE READY FOR SHIPMENT APRIL 20TH.

My bees are equal to any in the land. All queens bred from very best colonies. Prices on untested queens, $1.00; 6 $5.00; 12, $10.00. Tested, $1.50; 6 for $8.00; 12 for $15.00. Extra select for breeding, $2.50; 6 for $13.00. Remember, I warrant all queens shipped by me to all points in the U. S., and to be alive at destination. If dead, return queen and will send one in place. Send money by American Express or Registered Letter to

C. F. BECKEY,
Manitou Beach,
Lenawee Co., Mich.

Reference, P. M. Manitou Beach, Mich.

☞ In responding to this advertisement mention GLEANINGS

WANTED.—Agents to show up and sell the Pratt self-hiver; complete sample postpaid by mail for 75c; circular free. Address

E. L. PRATT, Beverly, Mass.

"Do it now." A success.

Leininger Brothers WILL SELL **Italian Queens**

And Nuclei Cheap. Send for Prices.

Fort Jennings, Ohio. 7tfdb

Black and Hybrid Queens For Sale,

For the benefit of friends who have black or hybrid queens which they wish to dispose of, we will insert notices free of charge, as below. We do this because there is hardly value enough in these queens to pay for buying them up and keeping them in stock; and yet it is oftentimes quite an accommodation to those who can not afford higher-priced ones.

I have 20 black queens for sale at 25c each; all first-class and prolific.

W. J. FOREHAND, Ft. Deposit, Ala.

Wholesale and Retail Manufacturer and Dealer in

Bee-Keepers' SUPPLIES.

One-piece Sections a specialty. As good as the Best. Send for catalogue.

W. E. SMITH, Successor to Smith & Smith,
Kenton, Hardin Co., Ohio.

Wants or Exchange Department.

Notices will be inserted under this head at one-half our usual rates. All advertisements intended for this department must not exceed five lines, and you must SAY you want your adv't in this department, or we will not be responsible for errors. You can have the notice as many lines as you please; but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices offering articles for sale, can not be inserted under this head. For such our regular rates of 20 cts. a line will be charged, and they will be put with the regular advertisements. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange S. C. White and Brown Leghorn and Pekin duck eggs, for Italian queens, comb foundation, etc. 8-9-10d

J. E. PRYOR, Maple Grove, Madison Co., Iowa.

WANTED.—To rent an apiary, or a position as an apiarist in California. Correspond with

CHAS. BROWN, Nicolaus, Sutter Co., Cal.

WANTED.—To exchange eggs for hatching, for thin foundation, or all-in-one-piece sections. My stock of Light Brahmas, White P. Rocks, and Golden Wyandottes, are as good as the best. 5tfdb

D. F. LASHIER, Hooper, Broome Co., N. Y.

WANTED.—To exchange Columbia Safety bicycle, '91 pattern, in good condition, for beeswax or offers, WALTER S. POUDER, Indianapolis, Ind.

WANTED.—A young man to work in apiary, and do farm work. Write, stating wages to

R. B. BONEAR, Cherry Ridge, Pa.

WANTED.—To exchange our steel Wonder fence-machine, or Black Minorcas or Light Brahma eggs, for honey-extractor.

SHERMAN F. HANSON, Scranton, Iowa.

WANTED.—To exchange a 5x7 camera nearly new —with tripod and every thing necessary for making pictures; also about fifteen Root's Dovetailed hives (some of them have never been used, and are well painted); also 100 tin-cornered wired frames, some filled with foundation and some with combs; also 100 all-wood frames, and 8 or 9 lbs. of comb fdn., nucleus hives, observatory hives (new) never used, but nailed and painted; and lots of other apiarian supplies. The above I would exchange, in part, for a good typewriter, or live stock of any kind. WILL H. ELLERINGTON,

Naples, Ontario Co., N. Y.

WANTED.—To exchange a good 6-in. Vandervort foundation-mill for cash or offers.

J. NEBEL & SON, High Hill, Mo.

WANTED.—A Safety bicycle. Any one having a Safety they wish to trade, please write to

F. H. MCFARLAND, St. Albans, Vermont.

WANTED.—To exchange L. combs for bees by the pound or nucleus. F. SCHILLING,

Jewett, Ohio.

WANTED.—To buy second-hand sawmill machinery. W. S. AMMON, Reading, Pa. 4-6-8d

WANTED.—To exchange bees and queens for strawberry and raspberry plants, and B. P. R. poultry. Correspondence solicited.

8-9db F. A. LOCKHART & CO., Lake George, N. Y.

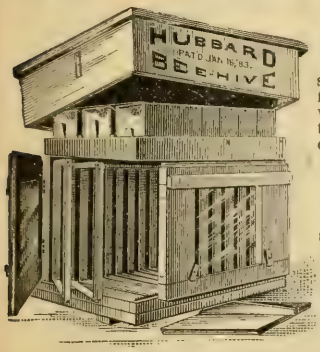
WANTED.—Extracted honey in large or small lots. R. K. & J. C. FRISBEE,

8-9db 172 W. Maple St., Denver, Col.

WANTED.—Situation as paper-machine tender, or job at some light work. Am B-flat cornet player, and reliable. F. FULLER, Box 89, Montague, Mass.

8-9db

HUBBARD BEE HIVE AND SECTION PRESS.



If you want to handle bees **easy** by sitting down to it, here is the hive. Frames fixed and variable distance combined. No wrenching or prying or scraping of combs together. Many thousands in use, giving excellent satisfaction.

Live Agents make Splendid Profits.

Large Circular of 20 pages free.

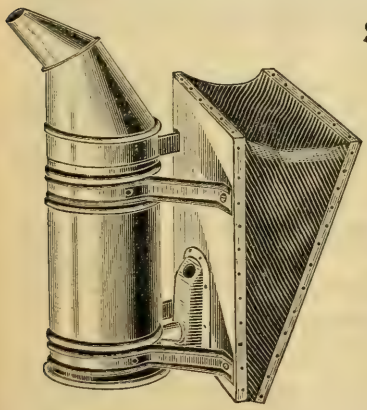
This **SECTION PRESS** (Pat'd) is sold at **$2.50** by the leading supply dealers. Ask them for it or send to me. A boy can put together 800 to 1000 sections an hour and have them **true.** Bend section around, put in press, give a little push—'tis done. Will last a life-time and is bound to please you.

Send for my Circular about Hive, Press, Foundation Fastener, Sections, Foundation, Italian Queens, Extractors, Veils, Honey Crates and Cases, &c. &c. It will interest you. Or send **15 cents** for Practical Book for Beginners—**"First Principles in Bee Culture."** 11th thousand just issued.

G. K. HUBBARD, 277 Harrison St., Fort Wayne, Ind.

In writing to advertisers please mention this paper. 8tfdb

NEW CRANE SMOKER NOW READY.



Smoking Capacity and Strength of Blast Simply Amazing.

The **New Non-Smoke-Sucking Check-Valve,** by which a great blast is secured and the bellows kept clean, and the **double lining of Asbestos and Sheet-steel,** by which the fire-cup and nozzle are kept from becoming uncomfortably hot during usage, are **DISTINCTIVE** and **VALUABLE** features alone possessed by the new implement. It would be impossible to tell of all its unique features, and so we say, try it and fall in love with it.

Price, with 3½-inch fire-cup and curved nozzle, by mail, $2.00; by express, $1.75.

If your nearest dealer in supplies does not keep it, write to the authorized manufacturer,

A. I. ROOT, Medina, Ohio.

N. B.—Don't forget that we are headquarters for all kinds of bee-keepers' supplies. Our new 1893 catalogue of 52 pages now ready for mailing.

The Golden Beauties.

My 5-banded Italian queens can not be surpassed for honey-gathering, gentleness, prolificness, and beauty. Untested, 75c each; tested, $1.00; breeding queens, $2.50 to $3.00. We warrant our queens purely mated. On orders for 5 or over, 10 per cent discount. Safe arrival and satisfaction guaranteed.
Address **C. B. Bankston, Chrisman, Tex.** 8tfdb

30 THIRTY YEARS' EXPERIENCE. 30

TRY OUR HARDY STRAINS OF BEES.

QUALITIES: Extra honey-gatherers, long-lived and winter well. Leather-colored Italians and golden Carniolans. Copy of March Apiculturist, giving my latest method of rearing queens, given to each customer. Each queen $1. Catalogue free.

HENRY ALLEY, Wenham, Mass.

Please mention this paper. 8tfdb

50 Colonies of Italian Bees

in ten-frame Langstroth, and eight-frame A. I. Root's Dovetailed hives, bees in tip-top condition. Safe arrival guaranteed. JOHN GRANT,
8-11db Batavia, Clermont Co., Ohio.

Non-Swarming Bees!

I have been breeding for some years for a non-swarming strain of Italian bees, and with very gratifying results. I believe that at least 90 per cent of my queens will not swarm under any ordinary circumstances. I will sell queens bred from the best selected stock, at the following prices, which are so low that you need not feel swindled if they do swarm:

Pure Tested Queens, $1.00; $10.00 per doz. Warranted queens, after May 1, same price.

Special terms for large orders. Hybrids and culled Italians, 25c each. 8-9db

T. W. LIVINGSTON, Dalton, Ga.

Ah, There! Do you know that Miller Bros. are prepared to furnish you with the best Italian queens reared by the best methods? Also all kinds of bee-keepers' supplies. Send for catalogue to MILLER BROS.,
8-9-11d Bluffton, Montgomery Co., Mo.

I have one of the choicest flocks of

BROWN LEGHORNS IN THE STATE.

Keep no other kind. Eggs, 75c per 15; $1.25 per 30.
8tfdb B. G. SCOTHAN, Rogersville, Mich.

☞In responding to this advertisement mention GLEANINGS.

"FLORIDA."—500

LEATHER-BACK ITALIAN QUEENS.

500 young queens ready for delivery April 20 to May 10. Price $10.00 per dozen. Special prices on three dozen or more. Purity and safe arrival guaranteed. The 300 tested queens are all spoken for.

A. F. BROWN, 7tfdb

Huntington, Putnam Co., Florida.

Tested Italian Queens.

Ready April 1, at $1.25 each. Untested, ready April 25; at 65c each; ½-doz., $3.50, or 1 doz., $6.50. Golden Italians from imported mothers; ready, untested, May 1, at 75c each; ½-doz., $4.25, or 1 doz., $8.00. Safe arrival guaranteed. 7-8-9-10d

Stewart Bros., Sparta, Tenn.

BEES QUEENS

SMOKERS, SECTIONS, COMB FOUNDATION

And all Apiarian Supplies cheap. Send for Catalogue.

E. T. Flanagan, Belleville, Ill.

FINE ✱ ITALIAN ✱ QUEENS.

Tested, $1.00 each; Untested, 60c. ✱ ✱ ✱ ✱ ✱ ✱ ✱ ✱ ✱ Best Imported Mothers Only.

These are all young; and for gentleness, industry, and uniformity of color their bees are unsurpassed. Safe arrival guaranteed. Money-order office, Hickory. *Cleveland Bros.,*

7tfdb *Decatur, Newton Co., Miss.*

Spray your Fruit Trees and Vines

Wormy Fruit and Leaf Blight of Apples, Pears, Cherries and Plums prevented; also Grape and Potato Rot—by spraying with **Stahl's** Double Acting Excelsior Spraying Outfits. Best in the market. Thousands in use. Catalogue, describing all insects injurious to fruit, mailed Free. Address

WM. STAHL, QUINCY, ILL.

"Quigley's Golden Queens"

are bred for business; try one. Circular of Queens and Bee Supplies ready Feb. 1st. Send for it, and a free sample copy of the

PROGRESSIVE BEE-KEEPER.

Address **E. F. QUIGLEY,**

2tfdb **Unionville, Mo.**

Please mention this paper.

BEE-HIVES AND SUPPLIES.

Send for catalogue free. Address **SAMUEL JONES,** Highland Park College, Des Moines Iowa 1-19db

Bee-Hives.

Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue. 23 2'db

W. H. PUTNAM, River Falls, Pierce Co., Wis.

THE WHITE PEARL CUCUMBER is a great acquisition as well as a novelty. For full particulars and seed send 25 cents to

6tfdb THOMAS GEDYE, Dayton, La Salle Co., Ill.

Try Duval's Golden 5-Banded Bees.

That have given such general satisfaction. They are the best honey-gatherers, gentle, and not surpassed for beauty. Queens ready now at $1.25; 6 for $6.00. For full particulars and prices send for circular. **C. D. DUVAL, SPENCERVILLE, MD.**

Please mention this paper. 7tfdb

DO YOU KNOW

That W. H. Bright is selling bee-hives and fixtures at a bargain? If not write for price list.

6-11db *W. H. BRIGHT, MAZEPPA, MINN.*

Eggs and Plants.

Several varieties. Best quality. Any quantity. Finely illustrated catalogue free. Address

GEER BROS., St. Marys, Mo., or H. B. GEER, Nashville, Tenn.

Please mention this paper. 5tfdb

Bees

FOR SALE.—Fine stock—Langstroth frames—straight worker comb. Write for prices. 7-8d

H. LATHROP, BROWNTOWN, WIS.

ITALIAN QUEENS.

Tested, $1.50; 6 for $7.50. Sent after Mar. 1st. Untested, $1.00; 6, $5.00; or $9.00 per 12. Sent after April 1st. Safe arrival guaranteed. Send for circular of Bees, Queens, Drones, Root's Foundation, Extractors, etc. 4tfdb

J. N. COLWICK, Norse, Bosque Co., Tex.

For new price list of

PURE ITALIAN BEES AND QUEENS, AND WHITE AND BROWN FERRETS, ADDRESS

N. A. KNAPP,

ROCHESTER, LORAIN CO., O.

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Muth's Honey-Extractor.

Square Glass Honey-Jars,
Tin Buckets, Bee-hives.
Honey-Sections, &c., &c.
Perfection Cold-Blast Smokers.

APPLY TO

CHAS. F. MUTH & SON, Cincinnati, O.

Send 10-ct. stamp for "Practical Hints to Bee-keepers."

Please mention this paper.

TAKE NOTICE!

BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH,

14tfdb New London, Wis.

Root's Goods AT ROOT'S PRICES can be had at Des Moines, Iowa. Address Jos. Nysewander.

HATCH CHICKENS BY STEAM WITH THE IMPROVED EXCELSIOR INCUBATOR.

Lowest priced First class Hatcher made.

Thousands in Successful Operation.

SIMPLE, PERFECT, and SELF-REGULATING.

Guaranteed to hatch a larger percentage of fertile eggs, at less cost, than any other Incubator. Send 6c. for Illus. Catalog. Circulars Free.

GEO. H. STAHL, Pat. & Sole Mfr., Quincy, Ill.

☞ Please mention GLEANINGS 22-9db

If you want **Italian Queens Now,** send to J. N. Colwick, Norse, Texas, who sends bees and queens on receipt of your cash order. Tested, reared '92, $1.25; 6, $7; 12, $13. Untested, $1; 6, $5; 12, $9. Two-frame nuclei, $1.25. Nuclei, $4. *Drones, Bees* and *Supplies* cheap. Safe arrival guaranteed. Send for circular.

Martin's Prolific Buckwheat

Still continues to **outyield Japanese, largely,** under same conditions, here in Michigan. $1.25 per bushel, or 75 cts. per ½ bushel, sacks included, on board cars here. Address

Wm. Martin, HIGHLAND, Oakland Co., Michigan. 8-11db

HUNT'S FOUNDATION FACTORY.

Send for **Free Samples** of the **Finest Foundation** and **Sections** made. Special prices and advantages to dealers in Foundation. Send for my new illustrated **Free Price List** of every thing needed in the apiary. M. H. HUNT, Bell Branch, Mich.
2tfdb Please mention this paper.

Bees For Sale Cheap.

My bees having wintered in fine condition, as my old reliable strain of Italians always do, to reduce my stock I will sell 50 colonies at a low price.

Send for 44-page descriptive price list of Bees, Queens, and Supplies. The very best goods at the lowest possible price. 7-tfdb

WM. W. CARY, Colrain, Mass.
Please mention this paper.

Please mention this paper. 4 9db

Read what J. I. PARENT, of CHARLTON, N. Y., says—"We cut with one of your Combined Machines last winter 50 chaff hives with 7-inch cap, 100 honey-racks, 500 broad frames, 2,000 honey-boxes, and a great deal of other work. This winter we have doubled the amount of bee-hives, etc., to make, and we expect to do it all with this saw. It will do all you say it will." Catalogue and Price List free. Address W. F. & JOHN BARNES, 545 Ruby St., Rockford, Ill.

When more convenient, orders for Barnes' Foot-Power Machinery may be sent to me. A. I. ROOT.
23tfd

CHENANGO VALLEY APIARY.

If you want beautiful Golden Italian Queens, or from Imported mothers, send in your orders early. Tested, in June, $1.50; untested, $1.00. Strawberry-plants of the latest and best varieties cheap. Send for circular. MRS. OLIVER COLE,
6tfdb Sherburne, Chenango Co., N. Y.
☞In responding to this advertisement mention GLEANINGS.

I TELL you what, Jones, **Levering Bros.** sell the best goods and at the lowest price of any one I've struck yet. The largest and best equipped

Bee-Hive Factory

in the West. The Dovetailed Hive and New Hoffman self-spacing frame a specialty. Every thing used by practical bee-keepers at wholesale and retail. Send for their free Illustrated Price List, and save money. Supply Dealers, send for their Wholesale List. Address

LEVERING BROS.,
3-14db **Wiota, Cass Co., Iowa.**
Please mention this paper.

BEE-KEEPERS' SUPPLIES. Before placing your order for supplies send for our illustrated catalog. We are making the best goods at lowest prices.
E. H. TRUMPER, Bankers, Mich.

Globe Bee Veil

By Mail for One Dollar.

Five cross-bars are rivited in the centre at the top. These bend down and button to studs on a neck-band. The bars are best light spring steel. The neck-band is hard spring brass. The netting is white with face-piece of black to see through.

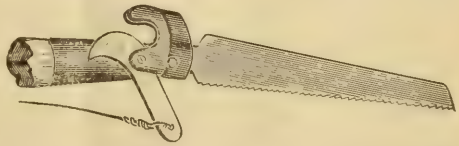
It is easily put together and folds compactly in a case, 1x6x7 inches, the whole weighing but 5 ounces. It can be worn over an ordinary hat; fits any head; does not obstruct the vision, and can be worn in bed without discomfort. It is a boon to any one whom flies bother, mosquitos bite, or bees sting.

Send for my Illustrated Catalogue of Supplies for the Apiary. I give a present on all orders of ten dollars and over. The catalogue tells all about it. *T. G. NEWMAN,*
147 SO. WESTERN AV., CHICAGO.

OTTUMWA BEE-HIVE FACTORY.

Bee-keepers, look to your interests. Every thing in the line of bee-supplies constantly on hand. Price list free. **GREGORY BROS. & SON,**
1-23o Ottumwa, Ia. South side.

Smith's Pruner



Now is the time for pruning your fruit-trees, and this is the best tool you will find for doing it. You notice there is a knife, or shear, for small limbs, and a saw for large ones. The handle on which it is mounted is seven feet long, with a lever for operating the shear. They retail generally at $2.00. We will make an introduction price of $1.50 each, or $13.20 per dozen. Trees need pruning before spraying, and during this month and next is the best time to do it.

A. I. ROOT, MEDINA, OHIO.

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CONVENTION NOTICES

The Lambton Bee-keepers' Association will meet in the town of Sarnia, on Friday, May 19, 1893. As this is along the line between the two countries, a special invitation is extended to all bee-keepers across the line. J. R. KITCHEN.
Weidman, Ont., Can.

The Susquehanna Co. Bee-keepers' Association will hold its next meeting at the Tarbell House, Montrose, on Thurs., May 4, 1893. All are invited. H. M. SEELEY, Sec.
Harford, Pa.

A Four-Color Label for Only 75 Cts. Per Thousand.

Just think of it! we can furnish you a very neat *four-color* label, with your name and address, with the choice of having either "comb" or "extracted" before the word "honey," for only 75 cts. per thousand; 50 cts. per 500, or 30 cts. for 250, postpaid. The size of the label is 2½x1 inch—just right to go round the neck of a bottle, to put on a section, or to adorn the front of a honey-tumbler. Send for our special label catalogue for samples of this and many other pretty designs in label work.

A. I. ROOT, Medina, O.

TILE ✠ DRAINAGE.

BY W. I. CHAMBERLAIN, A. M., LL. D.,

Formerly Secretary of the Ohio State Board of Agriculture, and late President of the Iowa State Agricultural College. At present Associate Editor of the Ohio Farmer.

This is a valuable companion to our other rural books. It embraces the experience of forty years of one of our foremost practical agriculturists, who has laid with his own hands over 15 miles of tile.

Price 35c; by mail, 40c.

A. I. ROOT, MEDINA, OHIO.

A B C OF STRAWBERRY ✠ CULTURE.

A ✠ BOOK ✠ FOR ✠ BEGINNERS.

BY T. B. TERRY.

This is Terry's latest and best work, and has received some very high words of praise. Who that keeps bees does not also have a little garden-patch? If you would learn to raise in it that most luscious of all fruit, the strawberry, with the best results, you can not be without this little book. Even if you don't grow strawberries you will be the better for reading it. Pages one-half size of this. Fully illustrated; 144 pages. Price 35c; by mail, 40c.

A. I. ROOT, MEDINA, O.

Deduct 3 Cts. per Pound

From our retail prices of foundation, given in our 1893 price list.

M. H. HUNT, - Bell Branch, - Mich.

FOR SALE. Apiary and farm of 40 acres, 1 mile from R. R. station. House, barn, poultry-house, etc. Apples, pears, peaches, cherries, and quinces. Bees winter safely without protection. Price $800.00. Bees at a bargain to purchaser of farm, or to any one who would pack for shipment at own expense. This will not appear again. For information, address, with stamp, *MRS. A. M. KNEELAND, Mulberry Grove, Bond Co., Ill.*

Bees and Queens Tested Italian queens, $1.00 each; select tested, $1.50; untested, 60 cts. One 2-frame nucleus, with tested queen, $2.00; with untested queen, $1.50.
STEWART & COOPER, Quebeck, Tenn.
9-12d

BEES WANTED.

Fifty nuclei, two frames of *sealed* brood with young Italian queen preferred, and bees to cover brood. Want them delivered May 20th. Reference, Bank of Groton, N. Y. *W. L. COGGSHALL, West Groton, N. Y.*

In writing advertisers please mention this paper.

For Sale at a Bargain.

The entire stock of bees and paraphernalia, all of superior quality and of the most modern and approved kind, of the late Albert Edwards. Enquire of Mrs. Albert Edwards, Box 18, Skaneateles, N. Y.

COOK, NOTTINGHAM & PIERCE.

Black and Hybrid Queens For Sale.

For the benefit of friends who have black or hybrid queens which they wish to dispose of, we will insert notices free of charge, as below. We do this because there is hardly value enough in these queens to pay for buying them up and keeping them in stock; and yet it is oftentimes quite an accommodation to those who can not afford higher-priced ones.

Forty queens, black and hybrid, from colonies that are to be broken up into nuclei; 25 cts. each, postpaid, for queens bred in 1892.
MRS. FRANK BENTON, Charlton Heights, Md.

I have 40 black and hybrid queens at 25 cts. each, or five for $1.00. THOS. E. ELAM, Mulberry Grove, Bond Co., Ill.

Kind Words From Our Customers.

GLEANINGS is the best journal that comes to our house. Please let it come. R. A. BELLROSE.
Chilliwack, Brit. Col., Mar. 18.

THOSE STOVE-MATS INDISPENSABLE.

Inclosed you will find 65 cents to pay for three stove-mats. Please send them as soon as possible, as I gave away the one I got of you some time ago, and our women-folks are as mad as the brood-nest of a torn-down hive of hornets. E. T. BROCK.
Danby, N. Y., Mar. 31.

Later.—Our women-folks have all struck. They won't keep house without the stove-mat.

I see you highly recommend the augite mat. Believing and having proven things to be as you recommend, I inclose stamps for two of the mats. GLEANINGS is excellent. The moral and religious seed you are sowing must bear fruit. Some of it will fall on good ground. "Be not weary in well doing, for in due time ye shall reap if ye faint not."
FRANKLYN HOWLAND,
Ag'l Editor of the *Standard*.
New Bedford, Mass., April 6.

HONEY COLUMN.

CITY MARKETS.

KANSAS CITY.—*Honey.*—The demand for comb and extracted is quite light; supply equal to the demand. One-lb. comb, white, 12@17; dark, 10@15. Extracted, 6@8. *Beeswax*, 22@25.
CLEMONS-MASON COM. CO.,
April 19. Kansas City, Mo.

CHICAGO.—*Honey.*—Fine lots of white comb honey in pound sections continue to bring 17@18c per lb.; but much of that which is now offered is showing granulation to a greater or less degree. Other lots, which have been properly kept, are in perfect condition, and bring the outside prices. Extracted honey ranges from 6@9. *Beeswax*, 25. Market steady.
R. A. BURNETT CO.,
Apr. 18. 161 So. Water St., Chicago, Ill.

BOSTON.—*Honey.*—Sales slow at 15@16 for best 1-lb. comb. Extracted, 8@9. *Beeswax*, none in stock. Supply light.
BLAKE & RIPLEY,
April 20. Boston, Mass.

DETROIT.—*Honey.*—Best white comb honey is very scarce, but sales are slow and prices remain the same; viz., 13@14. Extra lots would command 15. Extracted, 7@8. *Beeswax*, 25@26.
M. H. HUNT,
April 20. Bell Branch, Mich.

BUFFALO.—*Honey.*—The demand for honey is very quiet; stock in market is light. Fancy white in light supply, and firm at 17@18; choice, 15@16; dark, dull at 8@10. *Beeswax*, prime, 28@30; commoner, 22@25.
BATTERSON & CO.,
April 17. Buffalo, N. Y.

CLEVELAND.—*Honey.*—No. 1 white honey, 1-lb. sections, 15c. *Beeswax*, 30c. Our market on honey is about the same as usual, in fair shape.
WILLIAMS BROS.,
April 18. 80 & 82 Broadway, Cleveland, O.

CINCINNATI.—*Honey.*—Demand is slow for extracted honey. Arrivals are slow. We quote 6@8c a lb. on arrival. Prices are nominal for comb honey; demand slow, with no choice on the market. Fair white brings 12@16 in a jobbing way. There is a fair demand for beeswax at 24@27c for good to choice yellow.
CHAS. F. MUTH & SON,
April 19. Cincinnati, O.

MINNEAPOLIS.—*Honey.*—There is quite a stock of poor honey on the market, but the sale is slow. Good stock is in fair demand. We quote: Fine white clover, 16@17; 2-lb. combs, 15@16; buckwheat, 13@14. Extracted, 10@11.
J. A. SHEA & CO.,
April 14. 14 & 16 Hennepin Ave., Minneapolis, Minn.

ST. LOUIS.—*Honey.*—We quote you to-day's honey market: Comb, choice white clover, 17@18; fair, 13@15; broken and dark, 10@12½. Strained honey in barrels, 5@6½; in cans, 6½@10. *Beeswax*, prime stock, ready sale at 25. Selected on orders, 28@30.
W. B. WESTCOTT & CO.,
April 19. St. Louis, Mo.

KANSAS CITY.—*Honey.*—Market cleaned up.
HAMBLIN & BEARSS,
April 19. 514 Walnut St., Kansas City, Mo.

ST. LOUIS.—*Honey.*—Market practically unchanged. We are in receipt of advices from the South of a good yield. Extracted, in barrels, 6½@7. *Beeswax*, prime, 25¾.
D. G. TUTT GRO. CO.,
April 21. St. Louis, Mo.

PRATT SELF-HIVER, BY MAIL, 75C; CIRCULAR FREE. E. L. PRATT, BEVERLY, MASS.

"Quigley's Golden Italians"

Are big yellow bees bred for honey-gathering and gentleness. They have stood the past severe winter without protection and without loss. Warranted purely mated. Each, $1.00; 6 for $5.00. Safe arrival and satisfaction guaranteed. Circular of queens and a full line of bee-supplies sent free.
9-tfdb E. F. QUIGLEY, UNIONVILLE, MO.

BUFFALO, N. Y. Unsurpassed Honey Market. BATTERSON & CO. Responsible, Reliable, Commission Merchants. 18tfdb and Prompt.

Muth's Honey

In packages of ¼, ½, 1, and 5 lbs.,
25c. per lb.
If sent by mail, add 17c for every lb.
C. F. Muth & Son,
976-978 Centr. Ave.,
CINCINNATI, OHIO.

Caramels.

BUGGIES at ½ Price
CARTS & HARNESS
$90 Top Buggy..$37
$95 Phaeton.....$54
4 Pass. Top Surrey..$47
$50 Road Wagon $25
$16 Road Cart..$8.25
Buggy Harness $3.85
$10 Buggy " $4.75
$30 Team " $12.50
Morgan Saddle $1.65
We Cut the PRICES and outsell ALL competitors. Buy of factory and save Middleman's profit. Catalogue Free.
U. S. BUGGY & CART CO.
55 S. Lawrence St., Cincinnati, O.

7-10db Please mention GLEANINGS.

Wholesale and Retail Manufacturer and Dealer in
Bee-Keepers' SUPPLIES.
One-piece Sections a specialty. As good as the Best. Send for catalogue.
W. E. SMITH, Successor to Smith & Smith,
Kenton, Hardin Co., Ohio.

Exploded!
(OLD IDEAS)

Following is from *Progressive Bee-keeper* (p. 13, Jan. 3, 1893):

It is said that you will ruin your apiary by introducing those yellow-to the-tip queens. Let us see how our own yard has panned out the past season. It contains the following strains of bees: Alley, Trego, Nebel, Laws, daughters of Root's honey-queens and Quigley's golden queens. All these colonies produced 100 lbs. of extracted honey each, half clover and half fall honey; none casting a swarm. All were as near the same condition as they could be got. The Trego stock supplied larvæ for about 300 queen-cells, and bees and brood for a number of nuclei. None of the others were drawn on for any thing. Some built queen cells in their upper stories. Three-fourths of the bees in the Trego colony are what are called five-banded. Now, there were fifteen colonies, all told, of the different strains that we worked for extracted honey, and the golden-colored bees among them have made a record equal to any.

A neighbor said to us recently: "My golden bees wintered the best of any I had."

We guarantee entire satisfaction or return your money. One warranted queen in May, $1.25; later, $1.00. All queens reared from one that gets *all* 5-banded bees. Reference, A. I. Root. Money-order office, Cable, Ill.

S. F. & I. Trego,
Swedona, = = = Ill.

What Stood the Test?

Hilton's Improved Chaff Hives have for the past 15 years. Send for his free illustrated catalogue of every thing needed in the apiary, of

Best Quality and Lowest Prices.

One hundred colonies of Bees for sale. Write for prices, and address

GEO. E. HILTON, Fremont, Mich.

8-13db Please mention this paper

Our new patent nozzle-handle and bent smoke discharge to each of the *first fifty applying* bee-keepers who have either of our three-large sized smokers, to put them on. State where you saw notice, size of smoker, etc. All we ask in return is a private letter within ten days after receipt of improvements, stating whether you like or dislike either the handle or curve, and if any change in them would overcome the defect you point out. After the fifty names are registered and supplied our new circular will be sent instead of handle, etc.

BINGHAM PERFECT

BEE SMOKER

Pat'd 1878, 1882, & 1892.

Cheapest & Best on Earth.

Send Card for Circular to

Bingham & Hetherington

ABRONIA, MICH.

8tfdb Please mention this paper.

PURE ITALIAN BEES.

By the pound, 90 cents. Untested queens from imported mother, 90 cts. Two-frame nuclei, both frames containing brood with all adhering bees, and untested queen from imported mother, $2.00. Tested queens, $1.50. Satisfaction guaranteed. I will be ready to ship by May 25th.

MRS. A. F. PROPER, PORTLAND, JAY CO., IND.

FOR SALE CHEAP, FOR CASH, Italian bees and Queens during 1893.

Address OTTO KLEINOW,
7-8-9d No. 118 Military Ave., Detroit, Mich.

A NEW BOOK ON

Tomato Culture, Plant Growing, AND **High Pressure Gardening in General.**

Price 35c; By Mail, 40c.

To get your tomatoes started, more or less gardening under glass must be done, as you are probably well aware. Well, when you can manage the tomato under glass, you are ready to manage almost any other vegetable crop; therefore we regard the tomato book as one of the most valuable if not *the* most valuable of any work on raising plants and vegetables that require protection from the frost; and whether the protection is to be in the fall of the year, or the middle of the winter, or in the spring months, you will find the tomato book full of the latest and most modern appliances for giving protection at the smallest expense. Of course, a part of it has already appeared in GLEANINGS; but probably considerably more than half will be found new to our readers.

A. I. ROOT, Medina, O.

Galvanic Battery Cheap.

I have one *new* combined McIntosh galvanic (18 cell), with the same a Faraday battery all complete in a highly finished blackwalnut case, nickel-plated handles, and in short the battery is in every respect *complete*, used but little, from the fact it was purchased for use in a disease that it would not reach. It cost new in January, 1893, $47.00 in Chicago. I will sell the same for $35.00, or would exchange for a one-horse-power Shipman engine in good order.

JAMES C. HALL, Wyanet, Illinois.

☞In responding to this advertisement mention GLEANINGS.

MY FINE ITALIAN QUEENS WILL BE READY FOR SHIPMENT APRIL 20TH.

My bees are equal to any in the land. All queens bred from very best colonies. Prices on untested queens, $1.00; 6 $5.00; 12, $10.00. Tested, $1.50; 6 for $8.00; 12 for $15.00. Extra select for breeding, $2.50; 6 for $13.00. Remember, I warrant all queens shipped by me to all points in the U. S., and to be alive at destination. If dead, return queen and will send one in place. Send money by American Express or Registered Letter to

C. F. BECKEY, Manitou Beach, Lenawee Co., Mich.

Reference, P. M. Manitou Beach, Mich. 8-21db

☞In responding to this advertisement mention GLEANINGS

WANTED.—Agents to show up and sell the Pratt self-hiver; complete sample postpaid by mail for 75c; circular free. Address

E. L. PRATT, Beverly, Mass.

"Do it now." A success. 7tfdb

TAR-HEEL APIARIES! *Bees and Queens, 3 and 5-Banded.*

Warranted queens in May and June, $1.00. Bees, $1.00 a lb. Selected breeders, Golden Italian, or American Albinos, $5 to $10.

ABBOTT L. SWINSON, GOLDSBORO, N. C.

IMPORTED QUEENS.

In May and June, each	$2.00
In July and August, each	1.80
In September and October, each	1.60

Money must be sent in advance. Safe arrival guaranteed. Queens that die en route, if returned in the letter, will be replaced by mail, postpaid. No order for less than 8 queens *by express* will be accepted.

E. BIANCONCINI, Bologna, Italy.

7-9-11d Please mention this paper.

Pure Barred Plymouth Rock Eggs

for setting, 15 for $1. Mrs. A. A. SIMPSON,
8-9-10d Swarts, Pa.

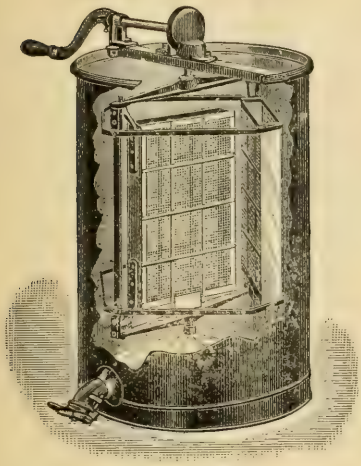
EGGS, $1.00 PER 13.

White P. Rocks, and White Wyandottes. A few fine Wyandotte cockerels for sale at $1.50 each.

6-9db **W. J. YOUNG, Scotch Ridge, Ohio.**

SELLING OUT! Chaff Hives, etc., very cheap. F. H. & E. H. DEWEY, 55 Mechanic St., Westfield, Mass. 8-12db

A Grand Success.



New Cowan Reversible Honey-Extractor.

May be Reversed without Stopping the Machine.

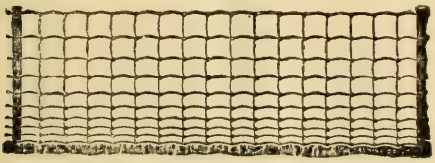
Strong, well made in every respect, light, and of convenient size. The can is but little larger than that of the Novice. The gear is beveled, and covered by an iron shield, and the crank outside the can. Frank McNay, of Mauston, Wis., a bee-keeper who produces tons and tons of extracted honey, says of it:

After carefully examining and trying the Cowan extractor, I have failed to find a weak part, and I do not hesitate to say that it is the best extractor made, both in regard to convenience and durability, and I shall replace all of my five machines with the Cowan as soon as possible.

It is indorsed also by J. F. McIntyre, an extensive extracted-honey producer in California; by W. Z. Hutchinson, Dr. C. C. Miller, Dr. A. B. Mason, and others.

Price all Complete, Japanned and Lettered, for L. Frame, $10.

A. I. ROOT, MEDINA, OHIO.



Neither Bayonets Nor Daggers

Are needed by the Coiled Springs when on guard. They stand up for right, but in a quiet genteel manner. No *barb*-erism, no slaughter-house tactics in any case. Simply this: "You can't pass here without an order from the boss"—and they pass not

PAGE WOVEN-WIRE FENCE CO., Adrian, Mich.

☞In responding to this advertisement mention GLEANINGS.

I have one of the choicest flocks of

BROWN LEGHORNS IN THE STATE.

Keep no other kind. Eggs, 75c per 15; $1.25 per 30.
8tfdb B. G. SCOTHAN, Rogersville, Mich.

The Golden Beauties.

My 5-banded Italian queens can not be surpassed for honey-gathering, gentleness, prolificness, and beauty. Untested, 75c each; tested, $1.00; breeding queens, $2.50 to $3.00. We warrant our queens purely mated. On orders for 5 or over, 10 per cent discount. Safe arrival and satisfaction guaranteed.
Address **C. B. Bankston, Chrisman, Tex.** 8tfdb

30 THIRTY YEARS' EXPERIENCE. 30

TRY OUR HARDY STRAINS OF BEES.

QUALITIES: Extra honey-gatherers, long-lived and winter well. Leather-colored Italians and golden Carniolans. Copy of March Apiculturist, giving my latest method of rearing queens, given to each customer. Each queen $1. Catalogue free.

HENRY ALLEY, Wenham, Mass.
Please mention this paper. 8tfdb

50 Colonies of Italian Bees

in ten-frame Langstroth, and eight-frame A. I. Root's Dovetailed hives, bees in tip-top condition. Safe arrival guaranteed. JOHN GRANT,
8-11db Batavia, Clermont Co., Ohio.

Non-Swarming Bees!

I have been breeding for some years for a non-swarming strain of Italian bees, and with very gratifying results. I believe that at least 90 per cent of my queens will not swarm under any ordinary circumstances. I will sell queens bred from the best selected stock, at the following prices, which are so low that you need not feel swindled if they do swarm:

Pure Tested Queens, $1.00; $10.00 per doz. Warranted queens, after May 1, same price.

Special terms for large orders. Hybrids and culled Italians, 25c each. 8-9db

T. W. LIVINGSTON, Dalton, Ga.

☞In responding to this advertisement mention GLEANINGS.

Ah, There! Do you know that Miller Bros. are prepared to furnish you with the best Italian queens reared by the best methods? Also all kinds of bee-keepers' supplies. Send for catalogue to MILLER BROS.,
8-9-11d Bluffton, Montgomery Co., Mo.

IMPORTED 1892 *Carniolans* on hand, *Italians* arriving soon, $5 each; *Cyprians, Syrians, Palestines,* $7. Home-bred, $1. Postpaid to any office in the world.
MRS. FRANK BENTON,
Charlton Heights, Md.

WANTED — To sell one six-horse boiler, 26x60, 37 2-in. flues; one five-horse engine, in good working order; $120.00, f. o. b.
V. W. KEENEY, Shirland, Ill.

READY AGAIN!

My location enables me to rear those nice Golden Queens, by Doolittle's method, as cheaply now as at any time in the North. Untested, 75c; 6 for $4.00; 12, $7.50. Last year's tested, $1.25; select, $1.75; breeder, $2.50. Safe arrival and satisfaction guaranteed.

J. B. CASE, Port Orange, Vol. Co., Fla.

5-Banded Golden Italians.

Three or five banded queens, each, $1.00; 6 for $5.00. Nuclei and full colonies cheap. Pure B. P. Rock and B. Leghorn eggs, $1.00 per 13. Catalogue free.
9-tfdb *Chas. H. Thies, Steeleville, Ill.*

75 *Colonies Italian and hybrid bees* in 8 or 10 frame Dovetailed or Simplicity hives, combs built on wired fdn. Every thing in first-class shape. Bees extra strong. Italians, $4.00; hybrids, $3.50. Hives and frames are Root's make. Safe arrival guaranteed. *L. H. ROBEY,*
9-10db *Worthington, W. Va.*

Bees for Sale.

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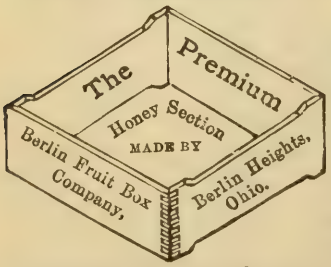

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GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.
ILLUSTRATED SEMI-MONTHLY
PUBLISHED BY A. I. ROOT. MEDINA OHIO
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Vol. XXI. MAY 1, 1893. No. 9.

STRAY STRAWS

FROM DR. C. C. MILLER.

ARE YOU LOOKING for another big crop?

WHERE'S THE GENIUS among extracted-honey men to get up an uncapping-machine of value?

ARE DIVISION-BOARDS of real value, or do some hold on to them merely for old acquaintance' sake?

THIS SPRING isn't so very bad, and it isn't so very good. Up to April 20 we've had few days for bees to fly.

DOOLITTLE SAYS, in *A. B. J.*, that bees from choice fly two to four miles, and gives pretty strong proof for his belief.

THE PORTER ESCAPE, according to R. C. Aikin, in *Review*, lets bees through so slowly that they have time to get over their hurry and then go out very slowly.

IN CUTTING FOUNDATION I've long known that rapid strokes made smoother work, but I never thought of Doolittle's explanation (page 296), that the wax became heated.

ALSIKE HONEY has a slight amber tint in distinction from white-clover nectar, and experts claim to detect a faint taste like basswood honey.—*L. F. Abbott, in A. B. J.*

WARNSTORF'S COMB has got this much the start of the Weed comb, that it is now regularly advertised and sold. But it may, like the Weed comb, soon sink out of sight.

THE WHEELBARROW has been recommended to aid in uniting colonies and introducing queens, and now it is said a two to five minutes' ride will subdue the fiercest colony.

LAST WINTER I tried occasional fires in cellar. Thermometer sometimes down to 35° but heated up to 50 or 60 every week or two. Works fairly well, but I think it's better never to let it go below 40°.

SUCH PROGRESS has been made in bee-keeping that it would seem the end of improvement must be about reached, and yet there never was a time when there seemed so many new things coming to light.

LOOSE BOTTOMS, as shown by replies to a query in *A. B. J.*, have their friends and their foes. Each one is likely to prefer the kind of bottoms he uses. Of those who replied, two to one use loose bottoms.

DANDELIONS are changing their minds. Formerly they bloomed after fruit-trees; last year with them, and this year away ahead. April 17 I saw dandelions opening, when buds were not swelled on fruit-trees. Perhaps the warm blanket of snow they had all winter brought them on earlier.

RUSSIAN SUNFLOWERS are extolled in one of the journals. They make a big show of big seeds containing little meats, and I think the common kind will yield more to the acre of either nectar or meats.

STIMULATIVE FEEDING, in spring, is still valued by some, while others think if bees have plenty of stores they'd better be left undisturbed. Here's a good field for experiment on the part of experiment stations.

CURRANT-WORM CURE, from *National Stockman*.—Dissolve half a pint of salt in ten quarts of water, and thoroughly sprinkle the bushes with it. Two or three applications will do the business. Worth knowing, if true.

JENNIE ATCHLEY thinks she has had as many as a hundred queens reared in November and mated the following March, and, with few exceptions, turn out to be good queens. An excluder prevented their flying till spring.

SELF-HIVERS haven't fairly got possession of the field till along comes that man Langdon with a device to make all kinds of hiving unnecessary. I've seen one of them, and it certainly looks as though it might hold the field.

THE EDITOR of GLEANINGS may be sound on bees, but he's "off color" on horses. Any one that thinks as he does, on p. 300, that "git up and dust" in a horse always goes with buck or fractiousness has had an exceptionally bad lot of horse flesh to deal with.

EXCLUDERS are not needed over a new swarm, says H. R. Boardman, *A. B. J.*, if supers are not put over till the queen commences laying below, which is usually in 24 hours. I don't use excluders under supers, and it is a rare thing to find brood in sections.

A BEGINNER is slow in learning that it doesn't pay to fuss with a weak colony. Double a weakling with a stronger, then later make a new colony from the stronger. You'll get as much or more honey, and it won't be half the bother, to say nothing of the anxiety one always has with a sick child.

GOOD ADVICE Hutchinson gives when he says, "I say, don't fuss with weak colonies. Have enough bees so that you will have enough if some of them do die." But isn't he putting it it just a bit strong in the following? "Many of our most successful bee-keepers do not see the inside of the brood-nests of their colonies from one year's end to another."

HUTCHINSON, when he put his bees in the cellar, set three colonies on a pair of scales. From

Nov. 20 till April 5, the average loss for each colony was 9 pounds, or 2 pounds per month, but he could not detect by frequent weighing that there was any difference as to loss of weight between one month and another. I suspect that's as it should be, and the cases of variation reported have been outdoors with varying weather.

WRONG CONCLUSIONS are sometimes reached from not taking *all* the facts in the case. A writer in *C. B. J.* cites the two facts that I am an advocate of artificial heat in cellars, and that my losses were heavy the previous winter, 1891-92, and takes that as proof that artificial heat is a bad thing. But he leaves out of account the third fact that that was the only winter for years that I kept no fire in cellars, the loss being really due to *lack* of artificial heat.

LANGSTROTH'S REMINISCENCES.

THE INVENTION OF THE COMB-GUIDE.

The examiner had referred him to a cut from which he inferred that Huber had used a sharp-edged guide; but in this he was evidently mistaken. There is, however, a note in the English translation of Huber, to the effect that bees like to commence their combs from a salient angle. If this suggestion had been properly appreciated by me I might have utilized it when I first began to use a bar hive—especially if I could have read an article on bees, published in 1793, in which the celebrated John Hunter says that, by the use of a salient angle, bees can be induced to build their combs in any direction desired. As my acquaintance with bee-literature increased, I found that even Hunter had been anticipated in this matter by Della Rocca, and that such a device had been fully described, over and over again, long before any attempt had been made to patent it in this country. I must ever regard it as a very fortunate thing that no patent was granted to me on this comb-guide. I had already incurred many vexations, great loss of time, and heavy expenses, but was spared the pain which has come to so many honest inventors when apparent success gives way to the bitter mortification of finding their patent absolutely worthless.

Much has been done of late years for the wide dissemination, through our public libraries, of the drawings, specifications, and claims of thousands upon thousands of United States patents which have been granted; but in the very nature of the case there must always be a great waste of time by honest inventors who have no means of learning what has been already accomplished before them. Let me give, in this connection, an anecdote told me by a friend who had been an examiner in our Patent Office.

An application had been received for a patent on a machine for pumping or raising water, and the party making it was informed that there was nothing new, and, of course, nothing patentable, in his invention, as it involved the very same principle which Archimedes had used for that purpose in his water-screw. It never occurred to the examiner that any one with brains enough to be an original inventor of this famous device could fail to understand the meaning of his reference, until there burst into his room a man who had come a long distance on the very wings of steam to see him about his invention. As soon as his excitement and want of breath allowed him to speak, he demanded to know where the rival claimant lived, and who he was, for he was very sure that this "cussed scamp, Arky-meeds," was trying to cheat him out of his patent, that he might get one for himself, though he could not conceive how he had stolen his information about it. My readers can imagine the astonishment and dismay of this evidently honest but ignorant man when informed that the Archimedes to whom he had been referred was not a rival claimant for a patent on the screw, and that, although the place of his residence could not be given, he might learn, from the encyclopedia handed him, that he was a celebrated mathematician who was born more than 2100 years ago!

As the Commissioner had decided that the sharp-edged comb-guide was not patentable, I might well take it for granted that this ended the matter. This was very far from being so. It seems that the first of the three interfering parties, after a considerable lapse of time, made an application to have his case taken up again. As nearly as I can now remember, his claims were slightly modified, but they covered essentially the same device; and the first intimation I had about any reversal of the Commissioner's previous decision was the issue of a patent to my opponent. This patent was sold for a small consideration to a party who at once began to use it for our annoyance. Instead of suing Mr. Otis or myself, who were the principal owners of the Langstroth patent, he proceeded against an owner of only an individual right; and instead of a suit at equity, which would oblige each party to give notice to the other of all testimony to be taken, so that full opportunity might be given for cross-examinations, and the case decided by a United States judge, upon examination of all the depositions taken, he made it a jury trial, and we never heard a word about it until it was decided in his favor! It would be too long a story to give a connected account of the vexations and expenses to which we were now exposed. Fortunately for us, our opponent, emboldened by the success of his schemes, brought a suit against Mr. Otis and myself; but by this time we had learned what Della Rocca, Hunter, and others had done, and were well prepared for defense. The late Col. S. S. Fisher, so eminent as an attorney in patent matters, was employed by us; and in his answer to the charge of infringement, he so fully set forth the proof in our possession, showing how long that comb-guide had been known, that further proceedings against us were abandoned.

If all the money—counting time as money—wasted upon that comb-guide could be set down in black and white, the sum total would surprise most of my readers; and to think that it might all have been saved, if I had only known what a single one of many persons had previously written about it! While this ignorance was my misfortune and not my fault, I desire, before dismissing the matter, to refer to one important fact which, if it had not been entirely overlooked, would very early in the controversy have settled the whole matter.

An inventor is allowed by law to apply for a patent on any device which he has used publicly for less than two years; but if he takes no steps to protect himself, his invention, at the end of two years, becomes public property. Now, the testimony of my opponent showed that he used his guide only in secret. It was impossible, therefore, for me to have got my ideas from him. The proof on my side was complete, that I had publicly used and sold that guide more than two years before he applied for a patent; and it was, therefore, public property. How strange that so decisive a point as this should have escaped the notice of the Commissioner, of myself, and the able attorneys in my employ!

L. L. LANGSTROTH.

[We regret very much to say, that, owing to the continued ill health of father Langstroth, we shall be obliged to discontinue for the present his very interesting series of Reminiscences. We are sure that our readers will be disappointed; but, of course for the present we can do no better. But we will take occasion here, however, to make use of an engraving from a photograph which we took while Mr. Langstroth was here last June, that we intended to use later on. It is the companion picture to the one on p. 117. Our venerable friend and benefactor sits in the foreground, holding in his hands one of the modern Langstroth frames having thick top-bars and self-spacing ends. Beside him is a Dovetailed Langstroth hive. Back of him is a portion of the apiary, and a partial view of the buildings that help to make up the manufacturing plant at the Home of the Honey-bees. The rest of the picture will speak for itself. It presents a very pleasant subject for contemplation.]

L. L. LANGSTROTH AT THE HOME OF THE HONEY-BEES—JUNE, 1892.

AFTER-SWARMS.

WHEN TO CUT CELLS; ALLEY CORRECTED BY DOOLITTLE.

Probably there is nothing so perplexing to the apiarist, nor, in fact, to the novice or the farmer, with his few hives of bees, as after-swarms. They are rarely wanted by any one, but are ever present to annoy, unless they are prevented from issuing by the apiarist. With box hives, and the knowledge of 30 years ago, very few could do little else than let them issue at will. They were often returned, only to issue the next day, and often again on the same day. The cry of "bees swarming!" about as soon as we were in the hayfield, on some hot July morning, during the fifties, and "bees swarming" all through the day, decided my father to let this branch of agriculture alone; and as four-fifths of these swarms were after-swarms, not being wanted, they were the ones which gave the verdict, or caused it to be given. But since the frame hives came into general use, this after-swarming nuisance can be prevented; but in order to do this we must know the conditions causing them to issue, and when they are to be expected. On page 258 of GLEANINGS for April 1, I find these words over the name of Henry Alley: "A queen usually hatches on the eighth day after the first swarm issues, and it is on that day that the second swarm will come off."

Now, friend Alley is one of our oldest bee-keepers, having had years of experience with bees before many of us were born; yet he made a mistake here, or else the types did not make him say what he intended. After years of study on this point, and the most careful watching, I find that, where the colony casting swarms is in a normal condition, the egg intended for a queen is deposited in the embryo queen-cell from three to three and one-half days before it hatches into a larva. This larva is in the larval form from five and one-half to six days, at which time the cell containing it is sealed. After the cell is sealed it is in the chrysalis form seven days, making a period of about sixteen days from the time the egg was deposited in the cell to the time the queen hatches. When the queen first emerges from the cell she is a white weak thing, unless kept in her cell after maturity by the workers, as all who have handled queens well know, and is no more fit for leading out a swarm than she is for egg-laying; but during the next 48 hours she gains strength rapidly, so that, when she is about 30 to 36 hours old, she begins to "pipe," or "peep," as it is termed; and when she is from 48 to 60 hours old she is ready to lead out a swarm, where there are rival queens in other queen-cells. From the above it will be seen that the second swarm does *not* come on the day the young queen hatches, but about two days afterward. This, I believe, is according to Quinby in his "Mysteries of Bee-keeping Explained," which I have always found to be very nearly correct on all topics on which it treats. If any one objects to my using the term "leads out a swarm," just tell him that, with the first (or prime) swarm, having the old queen, the bees seem to be the leaders in the swarming movement; but with all after-swarms the case is different, for with these we find the young queen the first, or among the first, to leave the hive. When a colony is in a normal condition, or when an apiary is not affected with the swarming mania, the first swarm issues upon the sealing of the first queen-cell, unless kept back by unfavorable weather or circumstances. By issuing upon the sealing of the first queen-cell, I mean this: If the cell is sealed at some time during the hours of 8 to 12 A. M., the swarm is likely to issue from 12 M. to 3 P. M. of the same day; but if sealed from 2 P. M. to 8 A. M., then the swarm will issue during the forenoon, so that, in this latter case, which is the usual one, the cell may be sealed anywhere from one to eighteen hours before the swarm issues.

I have been particular in this matter, so that we could know just when to cut off the queen-cells to prevent these after-swarms. If we cut off all the cells but one on the fifth or sixth day after the issuing of the swarm, as has been recommended many times, we are not sure that the cell left will hatch; and, furthermore, the bees still have larvæ young enough to convert into queens, which they are almost sure to do, and in this case they will often kill the queen which hatches first, instead of allowing her to destroy these later-started cells, when we not only have as many after-swarms as we should have had, had we not cut the cells; but we have also the disadvantage of having queens reared from old larvæ, which, all concede, gives inferior queens. Now, if we wait about this cutting of cells till the eighth day we shall run no risk of the colony swarming; where the first swarm was not kept back by foul weather, there will be no larvæ young enough to convert into queens, and, as a rule, the first young queen will be hatched, when we can make a sure thing of the matter if we are sure we cut off all the queen-cells there are in the hive. For these reasons I now wait till the morning of the eighth day after a first swarm has issued, when I open the hive, take out the first frame, and hastily glance over it for nearly ripe queen-cells; and if none are found I shake most of the bees off near the entrance of the hive, into which they will immediately run, when the frame is closely inspected for queen-cells, peering into every nook and corner for them; for, should some small or crooked one be missed, swarming would surely result. All cells found are cut off, after a frame has been shaken to rid it of bees, for this shaking of the young queens in their cells is almost sure to kill them or cause deformity. The next frame is treated the same, unless ripe cells are found, in which case it is set outside the hive, awaiting the finding of a cell from which a queen has hatched, when all are cut off; but should none have hatched, then the best one of these ripe cells is saved and put back into the hive. In this way we can make sure that no swarm will issue, after the first, from this hive, and it is the only certain plan I know of.

G. M. DOOLITTLE.

Borodino, N. Y., April 17.

RAMBLE NO. 83.

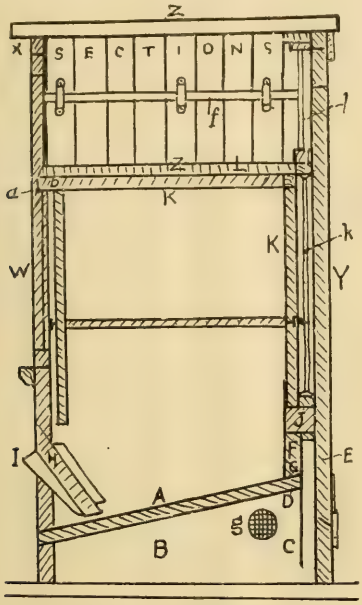
JOHN S. HARBISON AS PIONEER, BEE-KEEPER, INVENTOR, AUTHOR.

Mr. Harbison, who, since the year 1857, has had such a prominent place in the apicultural ranks, and an especial prominence in developing the honey resources of California, now resides in an elegant home in the city of San Diego, and with beautiful surroundings, such as only this favored clime can produce.

Mr. Harbison was born in Beaver Co., Pa., Sept. 29, 1826. He is a thorough American, and traces his lineage back through several generations. His grandparents were active patriots in the Revolution, and in frontier service against the Indians; and, besides their skill in arms, the Harbison branch of the family gave their attention to mechanical problems, and were the first to erect a gristmill in the then wilds of Western Pennsylvania.

Mr. Harbison's early life was spent upon a farm; and his father, being an extensive bee-

keeper, in the old-fashioned way, with log gums and straw skeps, the son became familiar with the buzz and industry of the honey-bee early in life, and imbibed a love for them.



SECTION OF HARBISON'S HIVE.

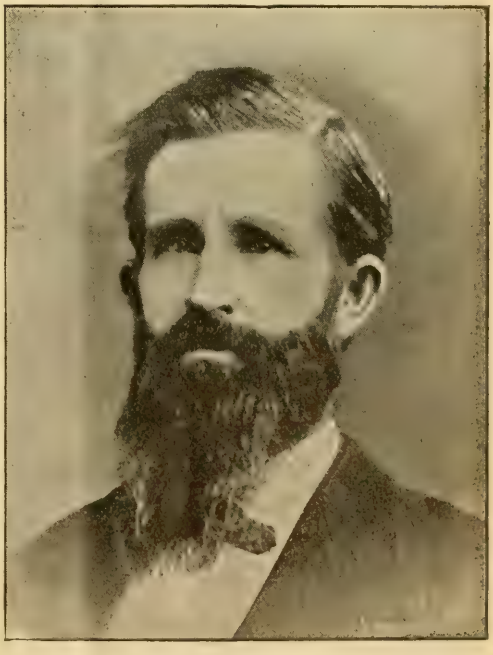
What may be termed the first real advance in bee culture in this country was made about the year 1843, in the invention and introduction of the Weeks patent chamber hive. Mr. Harbison, recognizing its advantages over the old straw skep in use, adopted the new invention, and used it quite extensively for several years. Like all young bee-keepers, he was possessed with the spirit of invention; and, thinking there was a good field for improvement, and greater possibilities for bee culture in the future, Mr. H. improved upon the Weeks hive, and, while retaining the inclined bottom-board, he invented a movable platform upon which combs could be adjusted; after which the bees would attach them to the hive. The improvement admitted of an easy transfer of combs, and the improvement was within a few steps of the later movable-frame hive.

Owing to heavy winter losses, and perhaps, also, to the "gold fever" that raged in so many minds during the early and wonderful discoveries in California, Mr. H. resolved to seek his fortune and a more genial clime, and came to this State in 1854. Soon after his arrival we find him in the Campo Seco mining camp, in Amador Co. His ventures here were disappointing, and, after several weeks of hard labor and but little yellow metal to show for it, he left the mines and found employment in the Sutterville sawmill, near Sacramento. This business was, however, distasteful; and after several months work he resolved to give up the avocation for which he had but little taste, and to devote himself to something with which he was familiar. He accordingly sent to his home in Pennsylvania for a general assortment of seeds, and for a small invoice of fruit-trees. They arrived safely, and he started the first nursery of fruit and shade trees in the Sacramento Valley; and from this and subsequent importations were started the great fruit-orchards that are found on both sides of the Sacramento River.

The first shipment of bees came to California the year previous to the arrival of Mr. Harbison. Of the first lot of 12 colonies that were imported, only one survived. This was taken to San Jose, and threw off three swarms the first season. The owner, Mr. Shelton, being killed by the explosion of the steamer Jennie Lind, the colonies were sold, and brought over $100 each.

The next importations were by Mr. Wm. Buck. Out of two importations amounting to 78 colonies, only 25 were safely landed.

In 1855 the first swarm of bees was brought into the Sacramento Valley, and soon died, which gave an impression that bees would not live there. These experiments coming under the observation of Mr. Harbison, he sent east for one colony of bees. It arrived with but few bees in it; but the building-up of this weak colony, under the experienced hands of Mr. H., and their rapid increase and the large amount of honey gathered, demonstrated that California was to be a golden State for bee culture; and in 1857 Mr. H. started for the East to make a large shipment under his own personal supervision. Sixty-seven colonies were prepared from his own apiaries in Pennsylvania, and, after a voyage via the Isthmus to San Francisco, and then up the Sacramento River, an entire distance of 5900 miles, the longest continuous voyage bees had ever previously been shipped, the importation arrived with a loss of five colonies. Others were, however, so weak that a doubling-down left 50 strong colonies. Other larger and successful shipments were made, and 240 colonies of these importations and their increase were sold for $100 per colony.



JOHN S. HARBISON.

These successes gave an impetus to the importation of bees to California; and in the fall of 1858 over 1000 colonies were shipped to the State; but, owing to the inexperience of the parties shipping them, less than 200 survived.

After the importation era had become a thing

of the past, Mr. Harbison gave his attention to the improvement of the bee hive. During his visits to the East, in 1857, his attention was drawn to the newly invented Langstroth hive; and, giving it a trial, it did not come up to what he required in a hive; and upon his return to California he invented the well-known Harbison hive. That Mr. H. made a mistake in his line of reasoning, and in the conclusions arrived at, has been sufficiently demonstrated in the fact that the Harbison hive never made progress outside of California; and even here it is now being rapidly superseded by the discarded Langstroth or some of its modifications.

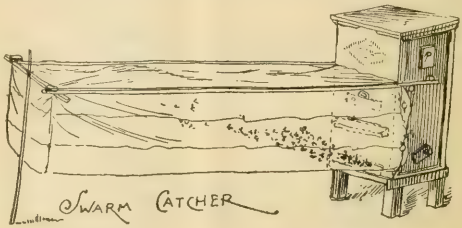
As long as the one product, comb honey, was the result of the labors of the bee and apiarist, the Harbison hive held its own remarkably well; and for a time one large section of country at least could boast of a standard hive. The invention of the honey-extractor, and its introduction into California, however, numbered the days of the Harbison hive, and the Langstroth was found to be a better all-round hive.

Along with the invention of the hive, Mr. H. made a great step of progress in introducing the section honey-box. This was first exhibited and excited much interest at the California State Fair, held in Marysville, in Sept., 1858. Mr. H. made several minor improvements in his hive, but never tried to adapt it to the use of the extractor, for he thoroughly believed in the production of comb honey only. Other parties have made a modification of the hive by sawing it off just above the fixed frames, and adjusting an extracting super with loose frames. In some portions of the State the H. hive is largely used with the 2-lb. section; and the producer regrets that the smaller size was ever introduced; but facts are stubborn things; and as the extractor has revolutionized one end of the H. hive, so the 1-lb. section has revolutionized the other, and both are hastening along to a complete victory.

HOW FRUIT-MEN DESTROY AN APIARY.

The next invention of importance, and which works well with the H. hive, was the Harbison stove smoker. Open the rear door of the hive, and set the smoker down in the rear, and a volume of smoke rolled up and against the exposed combs; but this smoker, used with a top opening hive, is of but little use, and the bellows smoker takes its place. The stove smoker holds a large amount of fuel, and its smoking propensities are continued for nearly a whole day from once filling.

The honey flora of the Sacramento Valley was trodden down and plowed under by the advance of grain-fields and orchards; and, failing to secure the large yields that at first rewarded the little toilers, Mr. Harbison, in 1869, formed a partnership with Mr. R. G. Clark for developing the virgin honey-ranges of San Diego Co. Great success attended their efforts, and in 1873 the first full carload of comb honey was shipped across the continent, giving California honey a world-wide fame. Mr. Clark sold out his por-



tion of the business in 1873. Mr. Harbison at one time owned 3500 colonies, and one of his greatest yields was 60,000 lbs. of comb honey from 300 colonies of bees.

Mr. H. has had some trouble with fruit-raisers, and the result was a conflagration of a whole apiary. Usually apiaries are burned by saturating each hive with kerosene, and then applying the torch; but in the above case the hives were placed together and burned. Perhaps it was in view of the inroads of the fruit-raisers that Mr. Harbison said that California bee-keeping has seen its best days, and that the honey-yields would hereafter wane instead of increase. The statement would probably prove true if the present conditions continued. That the conditions will change, and for the better, is evident from the progressive tendency of the bee-keeping industry. Mr. H. now owns only about 500 colonies, which are either rented or cared for by hired bee-keepers.

In 1861 Mr. Harbison published his book, "The Bee-keeper's Directory," a volume of 440 pages. The illustrations are of a high order, and the subject is treated in an exhaustive manner; and instead of being a book merely to advertise the H. hive, it is a valuable work for any bee-keeper to have. It is, however, out of print, and hard to find. Many of the problems that are now agitating the bee-keeping world were under experiment in California thirty years ago. The control of swarming was as much of a problem then as now; and Mr. Harbison invented the swarm-catcher, a large net that could be applied to the front of the hive, and in which the issuing swarm was caught. When not in use it was collapsed in front of the hive.

Although Mr. Harbison may be regarded as the father of California bee culture, he has never come in contact with bee-keepers through the bee-periodicals, and the fraternity have a sort of vague idea of the man. The photo I obtained was taken a few years ago, and is natural, with the exception of at present a few more gray hairs.

Mr. H. was married in 1865. A son and two daughters were the result of the union; and, the son dying in infancy, the two daughters are the only remaining children. Mr. H. is inter-

ested in the grocery business, and various other enterprises; and, though nearly threescore and ten years of age, he is a very active business man.

Our interview was very pleasant, and will be long remembered by the RAMBLER.

THE HIVER—ITS COST.

R. L. TAYLOR REVIEWS THE MATTER.

In the whole history of apiarian inventions, perhaps there is nothing so specious in its character, so well calculated to deceive the unwary, as the hiver; and I feel that at best great disappointment is inevitable, for many will undoubtedly be so blinded by the glare of its false promises that they will make haste to demonstrate their faith in its supposed virtues by investing in it money which I fear will never be recovered. To prevent, so far as may be, the vexation and loss likely to result, is so evidently praiseworthy that I am moved to point out, for the consideration of those interested, some difficulties that must be encountered in any attempt to make use of what seems admitted to be the least objectionable of the hivers thus far brought out; namely, the Pratt 1893 pattern.

Taking it for granted that the hiver will operate in accordance with the claims and expectations of the inventor, what I have to say now may be conveniently considered in answer to the question: "What will it cost?" for, whether the outgo necessary to its possession and use is money, labor, or other thing of value, it is equally comprehended within the meaning of the item of cost.

The first cost of the device specifically called the hiver is, of course, not great; but of what possible use would it be alone? Of course, to complete the hiver there must be added a hive entire, and the hive must be furnished; and if furnished according to the practice of practical bee-keepers, the expense in an apiary of any considerable magnitude would soon be felt to be onerous enough. It is no answer to this to say that the hives in any case would be needed for the swarms, for that is not true. Under good management I think I may safely say that only about a third of the colonies on an average, in apiaries devoted to the production of comb honey, cast swarms; and when extracting is practiced, the proportion is less still; so that, in an apiary of 200 colonies, the wear and tear on about 150 hives, together with the interest on their cost, and their necessary manipulation and storage—no inconsiderable items—would be a dead loss unless in some way the use of the hiver brings compensation. Would exemption from the care of swarms be adequate compensation? At a venture, I should choose to have the swarms hived in the old way. I think the expense would be less.

But when the too sanguine purchaser of the hivers has paid for them, and got them in position, he finds himself in a dilemma. The road divides; but whichever branch he proposes to take, he finds himself confronted by items of cost springing out of the ground, demanding recognition, and refusing to be laid. By the choice of the right-hand branch he may expect to be able to produce comb honey, to keep up the number of his colonies, to get some benefit from the young queens reared during and in consequence of swarming, and to guard in some degree against damage liable to result from the uniting of swarms, but at the expense of much care and hard labor, and of sundry vexations and costly mistakes and misapprehensions. By taking the other he shirks the heaviest of the labor, but thereby sacrifices all young queens, and some old ones too; foregoes the production of comb honey, and suffers the number of his colonies to be rapidly reduced.

Mr. Pratt, after contemplating both, and presumably trying both, has chosen the left-hand road. His plan is, to place the hiver under the colony in the spring, and leave it undisturbed till fall. When a swarm issues, the only exit for the queen is through the hiver into the hive below, whither the swarm is supposed to follow her, and set up housekeeping anew. There is no exit for queens, young or old, to the open air. Now let us see what additional items of cost must accrue against the hiver used as the inventor recommends it to be used.

First, inasmuch as there is no provision for the renewal of queens, either at the swarming season or by superseding, the colonies must rapidly perish; and within three years, if the plan is adhered to, the apiary will be as quiet as a grave. At what sum shall this item be estimated? But Mr. Pratt will exclaim that it will not operate so, for queens will be reared or procured, and supplied in this way or that. Well, at what sum shall this item, *i. e.*, the securing of queens by his method, whatever it may be, be estimated? He may take the cheaper of the two courses, and find that very dear.

Second, there can be no success in the production of comb honey if the bees swarm, for it can not be supposed that the bees will carry their honey up through the old brood-combs, as they are becoming empty by the hatching of the brood, into the sections, but the combs will be filled first to the extent of fifty pounds or more if so much is gathered; and then, loth to go up through so much solid honey to the sections, they will proceed to fill the new brood-chamber. The great bulk of all this honey should have gone into the sections; and when no swarm issues, who can say what proportion of the colonies, rather than go into the sections, will work downward through the hiver, entice the queen down, and then go through the same process as though they had swarmed? Let any one at all skilled in the production of comb honey say what the hiver would be costing under such circumstances as these.

Then, third, though the proposed plan did not involve the destruction of the colonies, the sacrifice of all the young queens must seem, to all who know the difference between a vigorous queen and a decrepit one, a tremendous price to pay for a set of hivers. The queen-breeder's price list would give only an inadequate idea of the cost, and this is an item which can not be avoided except by dropping the Pratt plan.

Any one giving the matter candid consideration can not escape the conclusion that Mr. Pratt has made a very serious mistake in choosing this branch of the road. He no doubt will say that all this damage may be avoided, and he would be right, but only on condition that he turn sharp around, retrace his steps, and take the other way. Let us retrace our steps, and try that way. We have tried the way of ease and ruin; let us explore now the course that gives promise of success, it may be, but gives no promise of exemption from care and labor.

We have learned at least some of the things that must be obviated before we can indulge even a faint hope of success; viz., we must save the young queens or else rear or purchase and introduce others; we must know continually the condition of the old queen, and, in case of accident to her through the vicissitudes of the new method of swarming, be prepared to replace her; and the tastes and inclinations of the bees must be humored in order to any

success in the production of comb honey. At what expense, for the sake of the hiver, must we be to accomplish all this? Success in every one of these particulars demands that the apiarist have constant knowledge of the condition of the colonies with respect to swarming, queens, and the occupancy of the lower hive without swarming. This involves the almost herculean labor of lifting each hive with its supers off the hivers about twice every week during the entire swarming season. They must actually be lifted off, for the hivers must be examined carefully for superseding queens as well as for old queens deserted by their swarms; and this must be done in the sun of the hottest summer weather. One need try it but once to become satisfied of the magnitude of the operation. If any bee-keeper mourns because he is out of work he may now cheer up; let him attach the newest pattern of hiver to his colonies, and from that time forward he will have no cause for complaint.

These are some suggestions, hardly more than hints, at the inadequacy of the hiver. One might enter more particularly into the measuring and weighing of its disadvantages; but as they seem so absolutely to smother any possible hope of advantage, it is scarcely necessary. R. L. TAYLOR.

Lapeer, Mich., April 19.

PACKING VERSUS SINGLE-WALLED HIVE.

AN EXPERIENCE THAT SEEMS TO FAVOR THE LATTER.

An old farmer once said to me, "Keep your bees dry and they will not freeze." While his statement may not be strictly true, there may be suggestions in his ideas. My experience this winter very much inclines me to the belief that bees should not be surrounded with any sort of packing that will absorb and retain moisture. This March I had occasion to change a colony from one chaff hive to another, to widen an entrance for spring. When I took the bottom out of the hive in which the bees had wintered, I found the chaff a wet, soggy, half-rotten mass. Another colony was in a shell set inside of a larger shell, no packing except on top. The brood-nest was contracted, and two new chaff division-boards put in at the sides of the frames inside of the inside shell—no connection with the outside, except the entrance. The inside shell rested on a sheet of tarred paper on the bottom of the outside shell or case. This colony had the greatest mess of dead bees, mold, and dirt, on the bottom-board, of any colony. The two chaff division-boards were, I might say, soaking wet. This overhauling I am speaking of was done in March. I cleaned out this hive with a little fire-shovel. Other hives were cleaned out the same way.

Finding my chaff-packed colonies in such rotten messes, I took my shovel and hastened to the colony that had no chaff packing, to shovel the dead bees and dirt out of it. I raised the quilt, blew in a little smoke, and took off the quilt. I was astounded. Instead of moist-looking, sickly bees like the others, they had that dry, glossy, chipper look you see in fine weather. There hung the combs, dry and bright, with that glossy appearance you would expect to see later in the season. I began taking out the frames, and set them aside so I might shovel the mess off the bottom-board as I had done the others. I looked down, and was again struck. There was nothing to shovel out. The bottom-board was almost as clean as in the summer. I had worried more or less about this colony all winter, because it was so poorly protected. I covered it down again, and went into the house and told my wife we need not worry about that colony, even if all the others died before good weather. This queen was a daughter of an imported queen, the same as the others in the yard. Her mating might have had something to do with her wintering, scarcity of chaff hives was my reason for risking bees in this hive.

In order that others may with me further test this matter, I will give details.

This hive was a solid box, made of heavy pine boards, 1⅛ in. thick, heavily painted white, with good dry cover of ⅞ pine. Inside the ends was nailed another board, about ⅞ thick, against the ends, with no paper or dead-air space. This inside board was to hang the frames on, making the ends of the hive about a solid two-inch plank. The sides were just the outside boards. The bottom was painted, cleated ⅞ stuff, not nailed to the hive; but the joints were probably filled with dirt, etc. The entrance was full width, but contracted by loose blocks set against the outside; open entrance, about 3 inches by ⅜.

Early in the fall the brood-nest was reduced to six combs, spaced summer spacing. The chamber was contracted by two ⅞ pine close-fitting division-boards. The openings along the tin rabbets had a small muslin rag stuffed in them. Behind the division-boards were old rags down at the corner at the entrance, to keep the cold from getting behind the division-boards through the entrance that would be otherwise open. No attempt was made to stuff behind the boards for warmth or protection, except as spoken of about the entrance.

On top of the frames were laid two or three sticks to insure space over the top-bars. Over this was carefully adjusted a piece of duck that had been thoroughly waxed by the bees in summer, making practically a sealed cover. On this quilt was laid some kind of a cotton pad nearly ¾ of an inch thick, that some old lady had probably made at one time for a back-rest on a rocking-chair. On this pad were thrown some old coats, pants, or something like that. You can readily see how necessity was my master. I mourned during the cold weather because this colony was not packed in chaff.

This one test is not conclusive. Colonies for comparative experiments should be with queens from the same mother, from the same batch of swarming cells, put into winter on the same number of combs, about the same amount of honey, and fixed for winter on the same day, very early in the fall, so all cracks can be sealed. Also try one colony of the same, but to be changed to a new chaff hive, too late to be sealed or propolized, and put in brand-new chaff division-boards at the sides of the contracted brood-nest. See how wet those division-boards are in the spring, if the winter is a hard one. That colony will probably be dead, with the "absorbents" all around them.

My experience convinces me the ten-frame hives are not much if any too large. I am satisfied the eight-frame hive is a mistake. Most of my queens use nine and some of them ten frames. They must have some room for stores.

While watching my weak colonies building up this March and April, I think I should like to have our brood-frames shortened at least one inch, and that comb surface added to the bottom, thus making them just a little shorter and deeper. I should want the same comb surface as now.

I had another colony in a home-made box that had tar paper between the two end-boards. This colony came through in very bad condition. But it was so poorly protected on top that it was no test. I am afraid we do not want tar paper. But I am not sure yet.

Ingram, Pa., April 20. PHILO S. DILWORTH.

SEALED COVERS A FAILURE.

WINTERING IN THE DOVETAILED CHAFF HIVE: SUCCESSFUL MOVING OF BEES.

Friend Root:—As I had some correspondence with you, and also with Capt. Hetherington and Dr. Miller relative to moving my bees during the month of March from Bloomfield, Ky. (latitude 38°), to this place (latitude 37°) by freight, it may be that your friends, and the readers of GLEANINGS generally, will be interested to know as to the success of the move, methods adopted, and lessons learned in the school of experience. I am very sure that, prior to moving them, I should have been delighted to possess just such information as I am now able to give from experience.

I reached Bloomfield March 9. The bees had a good flight that day and the next. I found my 34 colonies, 15 in chaff and 19 in single-walled dovetailed hives, *all* alive. I had packed 30 of them in October for the winter, using a device, similar to Mr. Hill's, above the brood-chamber, over which I placed, in a super, several thicknesses of burlap. Four of them I left with "sealed covers," all on their stands. It will be the last of "sealed covers" with me. These four were by far the most depleted, and were all suffering from dysentery. The fifteen in Dovetailed chaff hives were in the best condition I have ever found my bees in the month of March, during an experience of 12 years in different localities. All honor to the Dovetailed chaff hives. Undoubtedly it is a superior hive for all localities and seasons, being warm in winter and cooler in warm weather. Those in the single-walled Dovetailed hives were in excellent fix, except the four under "sealed covers." I prepared 20 of the colonies for shipping, according to the suggestions in the A B C, using the wire screens on top *only*. The remaining six I arranged with thin pieces of wood, $\frac{3}{16}$ of an inch thick, under the corners of both bottoms and covers, securing the latter with two 2-in. screws in each. On reaching their destination I found more dead bees in these six on which I had not used wire screens than in all the other 28. I put a ball of wet rags on the brood-frames in each hive. I shipped in a fruit-car; but as the mercury had dropped to 28° the morning I shipped, I closed all the ventilators except the two front windows, which were near the floor of the car, on the sides. The hives occupied the rear half of the car. They were placed in the car with frames parallel with the rails. The chaff hives were placed in the lower rows. Across the tops of these, and parallel with the ties, I placed two strips of lumber (2 x 1 in.), securing the strips with one five-penny nail, just where it crossed each hive, driven into the frame of the wire screen in front and rear. The second tier of hives was placed on these strips, which afforded ventilation to the hives below; and the cleats of the bottom-boards, exactly fitting over the strips, prevented the upper hives from being jostled either backward or forward.

The bees reached Glasgow, a distance of 160 miles, the next day, in splendid condition. Mercury rose to 40° that afternoon. Not one comb was broken down, not a quart of bees had been killed by the trip. Many of the combs were new last season. Most of them were on improved Hoffman frames, which are good enough for me. I would not, however, object to the thicker top-bar.

The prospects are exceedingly bright for a fine season in this section. The fruit-bloom is very heavy, and white clover abundant. Some colonies have already become so strong that I have been compelled to put on one super for fear of swarming fever.

I find myself admirably located for queen-rearing, to which I am giving special attention. There are only two colonies of bees within a mile of me, and not half a dozen within three miles. I shall have little difficulty in keeping my stock pure.

As to the question asked in GLEANINGS recently, concerning the hardiness of the progeny of Southern queens, let me say my experience has been decidedly favorable. Much of my present stock was reared from a Southern queen, the remainder from a queen purchased from you season before last. They stood the test last winter equally well, where the thermometer ranged from zero to 10° below, often for a week and sometimes ten or twelve days consecutively. I have now a queen, purchased recently for breeding purposes, from Mr. A. F. Brown, of Florida. I shall have an opportunity to test the matter more fully, as to this climate at least. F. G. RAILEY.

Glasgow, Ky., April 12.

SEALED COVERS AND ABSORBENTS; A DIFFERENCE IN FAVOR OF THE LATTER.

In regard to wintering bees, I would say that all of our 13 colonies came through all right. We have not lost a colony since we began the business, but can't say how soon we may; however, there was quite a difference in the condition of our bees. March 7th, part came out with nice dry combs; but most of them showed that dampness had collected to quite an extent on the inside. Even the combs of some were wet. Now, the most were under sealed covers in large chaff hives; part were in your Dovetailed chaff hives, and were prepared for winter by fitting thin boards loosely into the bottom of a super. We next put in a thick quilt, and filled the super up with chaff, and set it on top of the hive. Now, between these and the others with sealed covers I could notice no particular difference. One thing seemed a little strange. One colony was set into one of those large chaff hives quite late in the fall. The cover was not fastened down at all. There was also a hole bored through the cover, and the chaff cushion placed on top, the same as the rest, with a piece of old carpet on top of that. Well, what of it? Why, this colony came out just as dry and bright as a silver dollar—no dampness in the least. My neighbor has a hive with a telescope cap made perfectly tight. When this cap is let clear down for winter there is a ⅜-inch space over the frames. To experiment, he left the honey-boards (that cover the top of the frames) off, and every one so treated came out dry and in good condition. I noticed one thing, that hives with thin covers under the cushions came out dryer than those with thick covers. S. FARRINGTON.

Corunna, Ind., April 10.

CONFINING THE BEES WITH WIRE CLOTH IN CELLAR WINTERING.

I put my 34 colonies into the cellar the latter part of November, with sealed covers, but put a two-inch rim between the hive and bottom-board. This rim was made with an entrance one inch high and as wide as the hive, so as to afford bottom ventilation, and also for convenience in cleaning the bottom during winter, which I did three or four times without disturbing the bees. As my cellar is not mouse-proof, I nailed some wire cloth to pieces of blocks, and actually closed the bees in the hives. I could not see that this closing them in bothered them in the least, for they were more satisfied than any previous winter with a ⅜-inch open entrance and top ventilation. They were put out on the summer stands April

4. One of the 34 had died of starvation; all the others were strong, and are out flying now every day. The sealed covers had made it very damp in the hives—so much that the unpainted rims were water-soaked. The temperature in the cellar ranged between 38 and 45° most of the winter, and 50 the latter part of March. Even as high as that, the bees were perfectly quiet, so I could lift the hives up to remove the rims before they were put out.

J. F. ROSENFIELD.

West Point, Neb., Apr. 10.

[We have usually not considered it wise to shut in bees absolutely with wire cloth; but by emptying out the trays occasionally it does away with the stench from dead bees, and so makes the live ones quieter. Have others tried this with success?]

IN FAVOR OF SEALED COVERS.

I wintered 8 colonies on summer stands—3 in chaff hives with sealed covers, all in good shape; two 8-frame thin-wall Simplicity sealed covers, with four to six thicknesses of newspapers around the body (inside the outer cover). One smothered and the other is in poor shape. Three single thick-wall sealed covers are in good condition; two Simplicity in cellar, sealed covers, came out in good shape; 7 wintered in an out-building (sealed covers); one died with dysentery; the rest are in good shape. Apr. 4th it was up to 70°; bees had a good fly. To-day, the 7th, the ground is white with snow. I shall stick to sealed covers yet awhile.

I like GLEANINGS very much better than any other journal I have seen yet.

Cicero Center, N. Y. S. H. EASTWOOD.

SEALED COVERS; A CASE OF "DON'T KNOW."

You ask for reports on sealed covers. I went into winter quarters with 40 colonies with sealed covers; 3 starved, 37 are O. K. I never saw so many young bees so early in the season. They are chock full of bees, ready for the harvest. But, oh my! how the water did drip out of the entrance every time it thawed! I can't say that I like sealed covers. I fear the dampness, although they did well this time. I had 40 colonies packed in chaff. They always seemed to be nice and dry, but are not so strong in bees as those in sealed covers. I shall have to say, like Dr. Miller, "I don't know."

Edgerton, Kan., Apr. 15. B. F. DE TAR.

SEALED COVERS AND ABSORBING CUSHIONS, WITH THE DIFFERENCE A LITTLE IN FAVOR OF THE LATTER.

The bees have wintered fairly well in this locality. I packed a few with sealed covers, and could not notice any great difference in their wintering as compared with upward ventilation; but in an out-yard where all were packed with sealed covers I had considerably more than the average loss; but I think it was mostly caused by the long-continued cold weather when the bees could not break cluster to find their stores, and do not put *all* the blame on the sealed covers. W. G. LARRABEE.

Larrabee's Point, Vt., Apr. 17.

ABSORBING CUSHIONS AHEAD.

Out of 7 colonies in Dovetailed hives packed in winter cases, with chaff all around, and top covered with burlap and chaff, one died. It was a late and small swarm. Out of 9 colonies in box hives (which I bought too late to transfer), packed with straw all around and over sealed covers, leaving only entrance free, four died. Part of their combs were wet and moldy. All had plenty of stores. One of the box hives in which the bees survived is a cracker-box of ⅜-inch lumber, but the cover fits so poorly that the bees enter under it instead of below, hence had upward ventilation. A neighbor who leaves his hives unprotected on the summer stand (an open shed) lost 75 per cent. Last winter his bees wintered well, kept the same way.

J. F. EGGERS.

Grand Island, Neb., April 18.

DECIDEDLY IN FAVOR OF SEALED COVERS.

You can mark me down in favor of sealed covers. I like your Dovetailed chaff hive with sealed covers. I wintered 13 colonies without a single loss so far. All but 3 colonies were under sealed covers. Absorbing cushions became so damp and moldy that even the combs became very moldy; while under sealed covers every thing is dry and nice. Our bees are in good shape, with plenty of stores. Our neighbors all around us have lost very heavily

Bladensburg, O., Apr. 5. A. BLUE.

SEALED COVERS A BIG FAILURE.

The sealed cover did not succeed with me. I had 17 colonies under sealed covers, and sealed tight, with 5 inches of chaff over them, and 2½ in. on the sides. Eight of the 17 colonies are no more. They had lots of honey left in the hive. I had nine colonies under chaff cushions, and all wintered well. So my experience is overwhelmingly in favor of absorbents.

Flat Rock, Mich., Apr. 20. D. I. WAGAR.

SEALED COVERS INCLINED TO WARP.

My objection to sealed covers is, that moisture from bees swells the under side of the cover, therefore they warp up in this shape ⌣, or ⌒, thus breaking loose at the sides or ends, causing a draft through the hive. In my opinion there is nothing so handy as the enamel cloth, especially for handling in the working season: when you take sealed or flat covers off, the bees are apt to "sit down" on you rather hard. A. STEVENSON.

Tingley, Ia., April 6.

ABSORBING CUSHIONS.

I think the absorbing cushions the safest way to winter here when it rains. Here the entrances sometimes clog with ice, and are not safe with sealed covers; but with absorbing cushions will do no harm. I have always had good luck with chaff packing.

FRANCIS ORTT.

Darling Road, Ont., Can., April 8.

SEALED COVERS NOT AS GOOD AS THE ABSORBING-CUSHIONS.

Bees have wintered well. I have not lost one. I winter on the summer stands in chaff hives. We have had a very cold winter here. Bees have not done as well under sealed covers as in the large chaff hive. A. A. SIMPSON.

Swarts, Pa., March 30.

WINTERING POORLY UNDER SEALED COVERS.

Bees have wintered poorly around here. My loss is about 40 per cent. A neighbor lost 15 out of 16 swarms. They were packed in chaff, with sealed covers, but they were weak.

St. Clair, Mich., Mar. 29. J. M. RANKIN.

BAD FOR SEALED COVERS.

As per your request, I state that, under my observation, 97½ per cent of bees, under absorbents, in this locality, wintered; while from 50 to 75 per cent under sealed covers perished.

Sneedville, Tenn., Apr. 6. H. F. COLEMAN.

JAKE SMITH'S LETTERS.

THAT LECTER.

MR *A. I. Gleenings — deer sir:*—They was a man in our naberhood a sellin a noo patent bee-hive. He give a leckter onto bees in the skool house. He said he wanted to instiruck the peepel about the pewrest and best sweet ever concocted by nature. But my old woman sez he wanted to sell hives. I think Betsy izzent fur wrong. He give you a short report of his leckter. Leastways sum of it. It was as follows, viz: to-wit, namely:

"Ladies & gentelmen, from time immemoreal the hunny bee was diskuvvered ages ago. It was 1st diskuvvered in the carcus of a lion. The lion was ded. And no wonder, for a whole swarm of bees was enuff to kill enny lion.

"The best hunny is prodoost from a movable hive. You see be four you a spessamen of the movable hive. You see it has handles by whitch you can pick it up and move it ennywhere, and that's why it's called movable. They is two kinds of movable hives. Them whitch is made with handles in the 1st place is jist called movable, but I can fix enny hive soze to make it movable by puttin handles onto it, and when it's fixed that way it's called a fixed hive. The handles is secured by a patent.

"Improved bee-keepers keeps their bees in out aperries. An out aperry is one whitch is kep out doors. The free sirkellation of fresh air out door is condoosive to the health of the bees.

"Much of the hunny nowadays is made by contraction. The aperrist keeps a lot of movable hives, and makes a contract with the storekeeper for all his hunny at the beginnin of the season, and by this means of contraction he doant hev to trot round to sell his hunny to Tom Dick & Harry, but sells it all by contraction."

IZZENT THEY SUM MITY FINE HUNNY PRODOOST FROM WHITE CLOVER?

I hevvent time to tell you all the rest of his leckter; but when he got through he sed he wood be glad to heer questions or remarks from enny one. Then they all begun to holler out, "Jake Smith! Jake Smith!"

Then the man, he inquired was Mr. Smith in the house, and I felt it was my dooty to respond a reply. I coodent tock like the agent did, for he was very smooth spoken, but I could tell about how I hed dun.

I sed, sez I, I haint only a farmer, sez I, and I haint no improved bee-keeper, but I think hunny is a grate invenshun. Sez I, I have always kep my bees in a out aperry, but I diddent know befour that was the name. I doan't keep movable hives nor fixed hives, sez I, but jist common hives or scaps, and one pallus. I never practist contraction on the storekeeper, & most generally my fokes eats up what hunny we git, and most of you has tasted it.

Sez I, I haint nuthin to say agin the hunny prodoost from a movable hive, but I want to ask jist one question, izzent they sum mity fine honey prodoost from white clover? sez I. And, sez I, them handles may be secured by a patent, but they look like they was secured with screws. I jist sed that fer a joke, fer he ment you dassent make handles when they was patented. But I doant think yude git mutch more hunny with handles. JAKE SMITH.

RECOLLECTIONS AND EXPERIENCES; BY AN OLD BEE-JOURNAL EDITOR.

WAX-REFINING; A HOME-MADE BOILER; HOW EVERY FOUNDATION MANUFACTURER MAY HAVE GOOD FACILITIES AT A TRIFLING COST; A VALUABLE ARTICLE.

While engaged in the manufacture of comb foundation we accumulated a quantity of wax, unfit for foundation, much of it being very dark and filthy. Not only so, but we often made wax into foundation that did not please us, and which damaged our trade, but which, due to first cost, must be turned into money. To be able to refine such wax has been a luxury; for, to make the operation successful and expeditious, considerable investment has been necessary.

Recently we wrote to a manufacturer of foundation, asking his price for refining this stuff, and we found the cost on 500 to 700 lbs. would be quite an item. By correspondence we found a better market for this wax, if refined, much nearer home. As our time was not strictly valuable, we concluded to refine this wax ourselves. We applied to a manufacturer in town, to use steam from his boiler, but found his charge per hour would leave us little for our labor.

Not yet discouraged, we concluded to construct a boiler and do the work in our kitchen. This is how we did it:

We chanced to have on hand an iron pot that was once used to cook food for poultry. This pot holds about 12 quarts of water. The rim of it flared, funnel-shaped. We concluded to turn this pot into a boiler. We bored a $\frac{9}{16}$-inch hole about one inch from the top. We filed a bright surface all around the upper inside edge, and at a point opposite the hole. This work was done in about one hour. We next took it to our tinner, and had two pieces of ¼-inch steam-pipe cut; one piece (the one that goes into the pot) 2 feet long; and the other piece, to reach into the barrel, 30 inches long. The horizontal piece can be much longer, if you find it necessary. To make a solid job we concluded to let the horizontal pipe extend through the hole across to the opposite inside of the pot, hence we tinned the end of this pipe, and at a point to correspond with the hole. To let steam into the pipe we sawed two V-shaped openings in one side, near the inner end. It was now well soldered at the hole and at the end abutting the pot.

A heavy galvanized-iron cover was fitted to the top of the pot. Into this a hole was cut, and a ¾-inch coupling soldered. A plug closed the coupling. Now the cover was carefully soldered to the pot. An elbow on the screw end of the horizontal pipe, and a square nut soldered

to the upper end of the vertical length, to use as a handle to screw it on or off, completed the outfit.

The tinner's charge for material and labor was 68 cents, to which add two or three hours of our time and a 12-cent file, and we had a practical boiler. However, if you expect to use your boiler considerably, we advise that a ¾-in. steam-valve be soldered into the cover, with a short nipple at the upper end, in which to place a funnel.

After a time the lower end of the vertical pipe will be eaten off by the acid. The best way to construct this pipe is to make it in two parts, connecting the two with a coupling.

A good linseed-oil barrel should have one end removed, and the hoops carefully in place. With hot water and washing-powder, cleanse it well. Place this barrel near the cook-stove or range; fill the boiler or pot with rain water, and screw on the vertical pipe, with its lower end in the barrel. Put about 40 quarts of rain water into the barrel (hot water in both will save time); then add 1½ to 3 lbs. of sulphuric acid, depending on how dirty your wax is. Now fill the barrel to within 12 or 15 inches of the top with wax. You can put in about 150 lbs. If in a hurry, melt part of the wax in a pot on top of the stove, having added a little water to prevent the wax from getting too hot. If this is done, care must be taken that the pot does not stand in too hot a place, or the wax will boil over the stove and floor, causing fire risk, loss of wax, and a muss generally.

Over a good fire of hard wood or coal, your boiler will need replenishing with water every two or three hours. If you note carefully the weight of the empty boiler you can easily determine about how empty it is. Of course, as there are no valves to close there is no danger of explosion; but if empty, over a hot fire, the pot will probably be ruined or the solder melted off. If all the wax is melted in the barrel it will take some hours.

After the mass in the barrel is melted, if heat is still applied the mass will finally roll and seethe—in other words, boil rapidly. At this stage the mass will appear muddy, and rubbish will float on the surface. From this point the boiling must continue for two to five hours, depending upon the quantity of dirt in the wax at the beginning. At length, about all the rubbish will settle down. During this process of boiling, put a board, that fits partially inside the chime, on the barrel, over which place worthless bags, sacks, or garments, to retain the heat and steam. Useful articles will be spoiled if exposed to the vapors from the barrel.

Remove the boiler, and cover the barrel. In about two or three hours, dip off the clear wax, which must pass through thin factory or cheese cloth, and put it into suitable tin vessels to cool. We prefer to have a little hot water in these vessels, so that any impurities still in the wax may settle into it. When these cakes are cold, the sides of the vessels can be loosened with a putty or other suitable knife; and any impurity on the bottom is to be shaved off.

Pans to hold this hot wax are cheaply made of 20 x 28-inch roofing tin, by bending up the sides, letting them flare about five inches. Run a heavy wire around the top, and solder the corners. The tin at the corners should not be cut away, but bent over, and soldered fast, to strengthen the corners.

With care the wax can be dipped off till the layer in the barrel is not much over one inch thick. The residue should be left till nearly cold—say 16 to 24 hours. Underneath the solid wax will be found a cellular, waxy mass, that fails to harden. At first this seems to be a waste, for it surely contains wax; but under pressure the water is driven out, and the weight is trifling. To utilize this material would probably cost more than it is worth.

With good fuel, a six-hole range with water-reservoir, three barrels to boil wax in, and a boiler such as we describe, one man with an assistant should refine 1500 to 2000 lbs. of wax per week—a pretty good revenue, at 5 cents per lb. The acid will probably cost, for this amount of wax, $2.25; the fuel, hard coal at $5.00 per ton, about $1.25. The cloth strainers can be used only once. Throw out the rubbish, and put the waxy cloth into the next batch. We had a small quantity of cappings, and black old combs, that we pulverized finely during a cold day. This was put into one batch, and seemed to render perfectly. How easy in the future to render wax from old combs, as compared with former methods!

Manufacturers of foundation on a small scale will find such a boiler a great convenience, not only for refining wax, but also for melting and warming wax when dipping the sheets. Indeed, we think friend Root will at once prepare these boilers and offer them to his customers, for they must surely be in demand. At a slight additional expense a water-gauge can be set at one side of the pot, when a glance will indicate the time for refilling the pot.

Let us give a caution, so that others need not learn by experience that which cost us a little trouble. After dinner one day, while conversing pleasantly, we concluded the boiler was about empty, and the wax boiled sufficiently; hence we lifted the pot, replaced the stove-lid, and shoved the pot to the edge of the stove. After more talk and attention to minor duties, we unscrewed the vertical pipe and took the pot from the stove. We casually observed that the pot seemed very heavy, and, after going a few paces, wax began to run from the pipe. This continued, and we hastily procured a dipper, into which nearly a quart of wax escaped. Perplexed, we again lifted the pot, and for the first time realized that the pot was full of wax. How did it get there? A second, serious thought made it plain. The pot had been full of steam under pressure. The plug was in place. The pipe was in the barrel. Heat had been withdrawn; the steam condensed, and the wax passed in to fill the vacuum. We removed the plug, and allowed the wax to run out. After that our first care was to take out the plug.

We trust our friends will find this cheap boiler a source of pleasure and profit.

J. H. NELLIS.

Canajoharie, N. Y., March, 1893.

[Heretofore there has been no practical method by which bee-keepers not having access to regular steam-boilers could produce their own steam for the purposes of wax-rendering economically, and with the ordinary materials "around home," with perhaps the exception of one or two items. We are sure all our readers will feel indebted to friend Nellis for his very clear description. Having had experience years ago in a similar way, in making and testing iron-kettle boilers—not for the purpose of rendering wax, but for running steam-wheels and other mechanical toys—we can suggest a simpler wax-boiler than that of friend Nellis, simple as his is. Secure a large iron kettle. If you do not have one around home holding 12 or 15 quarts (the larger the better), you can get one at your hardware store for a trifling sum. From a sound two-inch pine plank, cut out a circular cover. A keyhole saw will cut it on a slight bevel, so that it will just drive into the kettle, after a little dressing with sandpaper, or, better, a wood-file. A better way, however,

would be to take a piece of plank to your nearest planing-mill and have it turned on a wood-lathe, so it will just make a good snug fit.

After the water is boiling in the kettle, the steam will make the cover steam-tight, because the wood will swell. Secure at your hardware store two ⅜ or ½ inch gas-pipe elbows; a short piece of pipe, say two or three inches long, threaded at both ends; another piece of a length that will reach from your stove to the barrel, and still another piece that will reach from the top of the barrel to within six or eight inches of the bottom of the same. Bore a hole through the top of the wooden cover of the kettle, a little smaller than the size of the pipe. Screw in the first-mentioned piece of pipe; afterward, as tight as you can do it with your hands, one of the elbows; and so on extend the pipe on into the barrel. Next bore an inch hole to be stopped with a wooden plug, so that the kettle can be replenished from time to time. So far, at much less expense, you will have a boiler that is in every way as good as friend Nellis', without any solder, and without any boring through the sides of the kettle; and very few bee-keepers will have facilities for boring through cast-iron. With such a boiler it will not matter if the kettle does boil dry, for every housewife knows that an ordinary iron kettle will stand such treatment occasionally.

Now, to get rid of the fumes of the acid, and the slopping and sputtering of the wax that may occur, we would extend the pipe connection so as to reach from the stove out of the window, into a barrel just outside. This will allow all acid fumes to rise in the air, right where they will do no harm to the occupants of the house. Having done this you are ready to proceed as friend Nellis describes above.

To make sure that this plan would work, we had our "small brother" test the matter outdoors, and we find that every thing is all right. Now, we can furnish the kettle at a nominal sum; but of course it will be cheaper for the most of you to purchase your own at your own hardware store, if you do not already have one. It is possible that some of our readers who are not of a mechanical turn of mind would not care to make the wood cover, even if they could. To accommodate such we will furnish an iron kettle holding 15 quarts, wood cover fitted in tight, with the pipe connections and all complete, for $3.00. This will make it possible for every one to make his own steam. There is no satisfactory way of rendering wax by the acid without steam.]

STARTING NUCLEI.

FULL DIRECTIONS ON HOW TO DO IT, BY DR. C. C. MILLER.

A correspondent asks me to tell in GLEANINGS how I form nuclei, especially (if I understand him correctly) when full colonies are divided up after taking from one apiary to another. The principal difficulty in establishing a nucleus is to get the bees to stay put. It is a very simple thing to take two or more combs with adhering bees and put them into an empty hive; but the difficulty is, to get them to stay there. Except the youngest bees, nearly all are likely, under ordinary circumstances, to conclude that the old home was better, and accordingly to return to it. But by means of an out-apiary, that difficulty is entirely overcome. Or, two bee-keepers living two miles or more apart could exchange colonies, and each take advantage of the moving.

I might answer the question in very few words by saying that a colony can be taken to an out-apiary, and, without any ceremony whatever, the frames of brood can be taken out, each of them put in a separate empty hive, allowing an equal number of bees to each, and there you are. The bees can't desert and go back to their old home, for they can't find it.

But no doubt the question meant to include more particulars, which I gladly give. When practicing the plan under consideration, I generally, if not always, raised a queen in each nucleus, and then the nucleus was developed into a full colony. At the time bees began to think about swarming, I selected one or more colonies to be divided, and from the selected colony removed the queen. Possibly I added to it brood from other colonies, exchanging for this brood-combs containing no brood. If the removed queen was considered a proper one to breed from, the bees, upon her removal, would proceed to raise queen-cells, or such cells were obtained in some way. A day or two before there was any danger of the cells hatching, the combs were looked over; and the probability was that the cells were not very evenly distributed, some combs having several cells and some having none. Then I evened up matters and put a cell on each frame of brood which had none. This was done at least 12 hours before the colony was to be removed to the other apiary, so that the bees would have time to do any patching and mending that was needed. The hive was now filled with brood-combs, each of which contained brood and a queen-cell.

But this would allow only one comb of brood with its adhering bees for a nucleus, and such a nucleus would be too weak for the best work. So, about two days before the time of removal, another colony was made queenless, to be taken along to the out-apiary. Arrived at the out-apiary, eight hives were placed in proper places to receive the nuclei. In each of the hives a frame with adhering bees was put from the hive containing the queen-cells, and also from the other hive a frame with adhering bees. If I had them to spare, a frame or two of honey was given to each of the nuclei, but they would get along without this, for the honey harvest was now on, and in each nucleus there was a fair proportion of field-bees. Indeed, I don't know of any other way in which you can be so sure of having in each nucleus a full assortment of bees of all ages.

The nuclei were now formed, and in the majority of cases I could count on finding the young queen laying two weeks later. Of course, as in all cases, some of the queens would fail to materialize; but the proportion was no greater, if as great, as by other methods. Some years ago, by following the plan outlined, I increased 12 colonies to 81, and took from them 1200 lbs. of honey. But it was an exceptionally good year, a buckwheat year at that, and the honey was nearly all buckwheat extracted. But the 81 colonies were all strong and in good condition. They were in ten-frame hives, and only one, two, or three frames were taken from a hive to be extracted at a time, always leaving each hive well stocked for winter should the harvest close at any time.

I would lay stress on the importance of not making nuclei too weak. I don't believe there is any economy in weak nuclei. I don't think they raise so good queens. Besides, they are so slow building up, that, although you may at the start make a greater number of nuclei from a given number of colonies, you will gain by having a smaller number at the start, and then make new ones later in the season from those formed earlier. Another reason for this is, that, if you start by making your nuclei too weak, the season may close unexpectedly early, and all will be left in bad shape for winter; but

if you have a smaller number, and all strong, then the danger is less, especially if you follow the wise rule of determining that, the later in the season you start a nucleus, the stronger it must be.

I think it is a fact, although I am not sure that it is generally known, that queenless bees, perhaps more particularly those that are engaged in rearing queen-cells, are much more inclined to stay wherever they are put than bees taken from a colony having a laying queen.

Another fact that I think is not generally known, is, that, when part of the bees of a colony become sufficiently detached from the main body, and yet have free communication with it, such bees, in the busy season, are very likely to raise a young queen, independently of any thought of swarming. It doesn't seem to matter much how the separation be made, whether by having one or two brood-combs above, below, or to one side of the regular brood-nest, separated by a queen-excluder from it, or in some cases separated merely by sufficient distance. The bees seem to feel themselves practically queenless, in spite of the fact that they can easily go where they can find the old queen. Now, in such cases I have taken the frame or two of brood with adhering bees, a day or two before I thought it was time for the young queen to hatch, and have been very successful in getting them to stay wherever put.

Marengo, Ill. C. C. Miller.

THE EVILS OF GLUCOSE ADULTERATIONS.

PROF. COOK DEFINES HIS TRUE POSITION.

Editor Gleanings:—It seems strange that, after one has fought and denounced honey adulteration for years, people should be ready to believe him its defender, upon the slightest suggestion. At our late Michigan convention, Mr. Heddon did defend the adulteration of honey with glucose. He argued that such glucose made it look better and taste better. I took the opposite of both these assertions. I am very certain that glucose adulteration, the only kind practiced, I think, is very harmful. I can tell such honey if only one-fourth is glucose, and it leaves such a metallic taste in my mouth, that, were I to use it for a little, I should have an aversion to honey. I not only held this as true at our own meeting, but at no small trouble I prepared specimens, using the best of honey. The judges, as I expected, had no trouble to select the adulterated specimens. Thus I say now, as I said then and have always said, such adulteration is most harmful; and if the product is sold as honey it is a rank fraud and most harmful imposture, and I think it should be severely punished by both fine and imprisonment; especially for a second offense. I said at our meeting, that, if it were true that glucose did improve honey—really makes it better—then I should never condemn it more—of course, I wouldn't. I should be a fool if I did. I would always praise, not condemn, an improvement. In this case I would condemn selling it for pure honey. But no one would; they would wish its own brand—the index of superiority—to help to sell it. But this is not to the purpose, as glucose injures honey, and will seriously interfere with the market if indulged in. Of this I have not a doubt.

I write this as I do not wish to be misrepresented, either at home or abroad. It is bad enough, right at home, where one is known; but it is harder to have the foreign papers so misinformed. It has been a great surprise to me that my position was so misunderstood. I said nothing to give such an impression. I argued with all the force I could exert to the exact contrary. I shall ever do so, unless I have reason to change my opinion as to such products which is not at all probable.

Ag'l College, Mich., April 19. A. J. Cook.

[We are very glad to receive this, inasmuch as we know that Prof. Cook has been in some quarters misunderstood; and we hope it will be the means of correcting any false impressions that may prevail, either at home or abroad. A brief convention report can not well give all that a speaker has said, and hence he may be misunderstood, as was Prof. Cook. We have had quite extensive correspondence with the professor of late, and know that, if there is any thing above another to which he is unflinchingly opposed, it is the mixing of glucose with honey. He is in a position to know, as well as ourselves, that there is no glucose on the market that will in any way add to the selling qualities of the honey, either in looks or taste. So small an amount as 25 per cent will ruin *any* honey; and there is nothing in the world that will set a going "the everlasting clack about adulteration" as quickly as will these glucose mixtures. People are suspicious, and have a right to be, when such goods are placed before them. The mixers *must* be ferreted out and exposed.]

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

DADANT ON HONEY-DEW.

In a small article, on page 266, our friend Henry J. Alvis says that we told him that bees would winter on honey-dew. We can not explain how he understood what we may have said. If he will open our book, page 330, he will see that we consider honey-dew as worse than dark honey for wintering. Besides, in the instructions to beginners, contained in our circular, and which have been sent to him for years, he can read that honey-dew and fruit-juice are bad winter food, and should be extracted from the combs. Chas. Dadant & Son.

Hamilton, Ill.

AN APPEAL TO INDIANA BEE-KEEPERS; WORLD'S COLUMBIAN EXPOSITION.

Indiana State Building, Jackson Park, Chicago, Ill., April 22.

Fifteen feet of show-case, 5x7 feet, has been purchased for the State honey exhibit at the World's Fair. Will you furnish from your apiary any portion of this exhibit? It now remains with the bee-keepers of this State to see to it that this space is well and appropriately filled; and we fully believe that your State pride, with our abundant resources, will prove you fully equal to the undertaking.

Mr. Sylvester Johnson, well known among the bee-keepers of this State, has kindly consented to look after the Indiana exhibit. He will be at the Fair Grounds throughout the time of the exhibit, and will do all in his power to see that exhibits are properly arranged.

We are depending entirely on this year's product, and consignments can be made in July. Plan your exhibit to occupy a space 2½ feet square and 5 feet high; pack carefully, and ship by freight to B. F. Havens, Dep't A, Agricultural Building, Jackson Park, Chicago, Ill. Freight must be prepaid, and at the close of the exposition the goods will be returned to your shipping-point free of charge. No cash

premiums will be paid from the State appropriation, but awards will be made by diploma.

I trust that you will make application for space at an early date, when more explicit directions will be sent you. Address me at Indiana State Building, Jackson Park, Chicago, Ill., giving me positive answer as to whether you will furnish an exhibit or not. I will send you full shipping directions upon notification that you will furnish an exhibit.

B. F. HAVENS,
Executive Commissioner.

THE DOVETAILED HIVE, WITH THE HOFFMAN FRAME.

is certainly *the* hive. As soon as the cover is improved I shall adopt it in my own yard. I would suggest that the cover be made as it is now, only that you use ½-inch lumber instead of ⅞, and have it in three pieces, matched. This will prevent warping and that chronic wind. Now, if it had another cover of $\frac{5}{16}$ stuff, projecting 1½ inches on all sides, and this covered with tin, I think it would be just the thing. This would leave an air-space which would turn the heat, and may be this same cover could be used for the winter case. As soon as this cover business is perfected we shall be obliged to lay aside our pet hives, even if it does go against the grain.

Indianapolis, Ind. WALTER S. POUDER.

[Our gable cover would answer your requirements.]

WHY BEES SOMETIMES CARRY EACH OTHER OFF.

In one of the back numbers of GLEANINGS I saw something about bees carrying one another off. That is not a rare thing in this section. It happens just at the close of chestnut bloom. The tag of the chestnut is covered with fuzz. As it turns brown it becomes sticky with wax. The bees will work on them late in the afternoon, and the fine fuzz will stick to their feet. It can be seen with the naked eye by watching when you have a chance. Look in front of the entrance in the morning, and see if it is filled up, and then examine it. GEO. SWEETING.

North Manlius, N. Y.

B. TAYLOR'S EARLY ADVOCACY OF THE SHALLOW BROOD-CHAMBER; HOUSE-APIARY COME TO STAY.

I have stood 30 years alone, most of the time, in advocacy of shallow double-hives, and see them at last winning recognition; and now I want to be put on record this early, as saying that house-apiaries have come to stay. When constructed and used aright, they offer advantages that will never be thrown away, when once understood. I have just completed a new one, 8x16 feet, in which I can work 46 colonies. Good colonies, in my imperfect house, wintered perfectly this unfavorable year.

Forestville, Minn., Apr. 6. B. TAYLOR.

OILY WASTE FOR FUEL, ETC.

I keep only a few bees for our own honey, and let the neighbors sample it too. I have 11 colonies; all wintered well so far. Have you ever tried oily waste for fuel in a smoker? I think it "takes the cake." I save it, and use nothing else. Do not stop your "Home talks" just because some can not enjoy them.

Bradford, Pa., March 25. W. H. PRATT.

DR. MILLER'S MANAGEMENT OF THE CAGED QUEEN AFTER THE ISSUE OF THE SWARM.

In "A Year Among the Bees," on page 69, Dr. Miller, in speaking of the management of swarming colonies, says, "After the queen is in the cage, the block is pushed in an inch or so, and the cage put where the bees can care for it, usually in the vacant part of the brood-chamber. Now, what I wish to know is, how long does he allow the queen to be caged? My experience last season was, when the queen was released she would come out of the hive and be found strolling across the yard with a few bees following her, sometimes trying to enter another hive, and in some instances the queens were killed. My queens were clipped.

Wyanet, Ill, April 8. JAS. C. HALL.

[Dr. Miller replies:]

In reply to the question of friend Hall, I think he will find all clear sailing if he will take the part he mentions as preliminary, and connected with all that follows on the rest of the page—in fact, with the next two or three pages. That is, the queen is caged and left in the hive for the bees to care for till I am ready to treat the colony, whichever mode of treatment is followed. If, for instance, the Doolittle plan is followed, as given on p. 69, then the queen is left caged ten days. If that plan is varied by putting the queen into a nucleus, then she was not caged longer than was necessary for my convenience. That might be three or four days, or I might be ready to put her into a nucleus right away, in which case it was not necessary for her to remain caged at all. Or if I "put up the queen," as given on page 70, then there was no need for her to remain caged, except long enough for me to be ready to take care of her, which might be right away or in three or four days. The point is here: If the queen were released in her old hive any time before all the cells were gone, then she would be very likely to come out again with a swarm. So if she were left caged in the old hive she would not be freed for ten days. If freed before that time, there still being queen-cells in the hive, I should expect her to act just as friend Hall describes; but if put into a nucleus, there would be no need of confining her at all, for all swarming would be given up. C. C. MILLER.

Marengo, Ill.

FASTENING STARTERS IN BROOD-FRAMES WITH GROOVES.

Mr. Editor:—The brood-frames which you made a few years ago had a groove cut on the under side, in which to put a thin strip of wood for a comb-guide. A lot of these frames was once received, and in some manner the comb-guides did not come with them. We wished to fasten inch strips of foundation in them for starters, but were puzzled how to do so. We had before used the usual method of mashing the foundation on with a chisel-shaped instrument. We could not put starters in these frames in this way without getting them to one side of the center of the top-bar, because the groove was in the center. So we pushed the edge of the starter down into the groove entirely, and fastened it there by crushing the edges of the groove. That did tolerably well until a better way was found out. The idea occurred to us that the groove would be just the thing in which to fasten the starters with flour paste. It proved quite satisfactory. We proceeded as follows:

Provide a receptacle a little longer than the frames, fit to hold the starch paste. The paste should be quite thick. The proper consistency can soon be found by trial. The starters should not be less than an inch or more in width, unless of heavy brood foundation. When narrow strips of thin foundation were used, the bees, in nearly every instance, cut it down to the wood. A starter long enough for an L. frame is taken up, and one edge dipped into the starch paste. This edge is pressed down in the groove,

which is about $\frac{1}{8}$x$\frac{1}{8}$. Then the frame is set away, starter side up, till the starch dries.

We liked this way so well that we used it in putting starters in several hundred frames since. Any one who has put starters into a large number of frames by mashing the foundation on, can appreciate a quicker and easier way. We intend to use it until we find something better yet. C. G. LOOFT.

Cochranton, O., April 1.

NO WINTER LOSSES.

I was astonished when I read the report in GLEANINGS, of your winter losses of bees. I have just been examining my bees in the indoor repository, where I put 50 of my weakest colonies on the 19th of November last, and I found them all living, and, I think, in very good condition. I have 55 packed outdoors, and they are all alive and in good order. What I want to say is, that I put 105 colonies into winter quarters, and they are all alive to-day.

I did not know any thing about bees until I read your A B C book three years ago this winter. I can't understand how you old beekeepers lose so many in the winter. I have lost only two during these three winters. One starved, and the other smothered in a packing-box outside, in January, 1892. They melted four combs, and there was about a pint of bees alive when I found them in that state. Perhaps when I feel inclined I will tell how I use my pets in winter. R. A. MARRISON.

Inverary, Ont., Can., March 28.

[You just wait. When you get to be an old veteran you will find there will come along times, say once in ten years, when you will lose heavily. We have had no losses worth mentioning, since the winter of 1880-81, till last winter, and we do not *expect* to have any great losses again for another decade. There was something in the winter, or in the locality, that made all bees wintered outside, in our vicinity, winter about alike; at least, our neighbors for miles around report about the same percentage of loss that we have had.]

WINTERING IN MICHIGAN; A GOOD WORD FOR GOLDEN ITALIANS.

I went into winter quarters with four colonies. One died with at least 35 lbs. of sealed stores; two reduced to three frames; the other is fully as strong as it was last August. They are occupying the whole of the eight frames; brood in four frames the 8th. They were all in the same kind of hive—four-inch wall of chaff, sides and bottom. Tops of frames were covered with eight-inch cushions made of burlap filled with wheat chaff. Three had a single thickness of burlap placed directly on the top of the frames, and a cushion on the top of the burlap. The other and the heavy one had two thicknesses of burlap (of a finer texture) over frames and cushion on the top of the burlap.

The one that died was a hybrid; the other two, leather-colored. The strong ones are yellow bees, or golden-colored, queen small and dark; bees large, gentle, and nicely colored. So, now, I admire the golden bees. The frames are 17¼ x12, outside measure. One queen was from Texas, three from Kentucky—the hybrid, the best one, and the darkest leather-colored. One of our bee-men lost all of his—two dozen or more stocks. Another with 56 lost all but 5. They do not take GLEANINGS, nor read the A B C either. I might say I had not read the A B C enough when winter set in, or I might have done better. I searched around in it for some knowledge as best to winter. I thought I had just struck the thing. Perhaps it was as good as any way for this extremely cold winter. Ought not the A B C to give at the close, for instance, of wintering, a recapitulation, for outdoor and indoor—in just as few words as possible? If you issue one in that way, I want it. Let it be the same as we used to have in our school text-books.

Northville, Mich., Mar. 16. CHAS. BIERY.

[A recapitulation in a few words would be unsatisfactory and misleading. The subject is somewhat complicated, and therefore can not well be abbreviated.]

FIXED DISTANCES, AND THE PRACTICABILITY OF HOFFMAN FRAMES.

In view of what has been written about fixed distances, closed-end frames, etc., and with my limited experience, I have become convinced that it is a convenience in handling, and a good help to get combs built straight, to hold the frames firmly in place. In order to do so I've placed blocks, 4 in. long, ⅜x⅜, on one side of the end-bars, by which means I can press the frames or combs together, and they will hang 1⅜ inches from center to center, as Manum advises; but Mr. Manum said, "Nail the frames to the brood-box with 10-penny nails, and then they would be fixed; try it." I wish you would scold at Mr. Manum for writing any such thing to me, for, if I were to nail my frames down I would use only a wire nail, not more than one inch long. It seems to me those blocks will keep the frames from being jostled together or getting too far apart; will enable the apiarist to hold the frames firmly in place while moving without nailing with either 10-penny or one-inch nails; will serve somewhat the purpose of closed ends; will hold the frames at suitable distances apart, and not prevent the spreading of frames further apart for winter; will not interfere with putting foundation into frames; in fine, will be a good thing, and I believe you summed up, at the close of the discussion, that *fixed* distances were necessary. I've also prepared one hive for holding about 24 frames, *a la* Doolittle, where he says he had one hive with brood in 32 frames, from which swarm, he says in *American Farmer*, he obtained 566 lbs. of extracted honey in one season, on the spreading-of-brood plan. I've also prepared one hive with ⅞-inch top-bars. With the thin top-bars, $\frac{5}{16}$, the bees attach the surplus boxes to the top-bars, with brace-combs, etc. Two years ago I obtained nearly 96 one-pound boxes of honey from one swarm, to which I gave two empty frames of comb twice in the middle of the brood-nest, at intervals of two weeks. I think they did not swarm; but they, being three miles away, I did not know nor care. I will call that long hive my "pallus."

Ludlow, Vt. A. P. FLETCHER.

CHAMPION ROBBERS; POLLEN-PICKING; THE WAY BEES USE UP MICE.

I have some bees—black, hybrid, and Italian, that are the champion robbers. Not only will they rob a hive with "neatness and despatch," if they get a chance, but will try to rob their sisters of pollen. I fed them some meal a few days ago, which they took eagerly. Noticing some bees that seemed to be fighting, I looked closely and saw that a good many bees were alighting on the backs of those which had secured loads of pollen, and were biting or trying to bite off pieces of the load.

Winter loss in this section of Connecticut is light. I have lost but 6 per cent so far.

While working with my bees last week I saw a mouse run from a hive, covered with

bees. It went perhaps a rod, then stopped, kicked a little, and died. There were over 50 stings in it. F. W. HUMPHREY.

Oronoque, Ct., Mar. 28.

CATFISH WANTED, ETC.

Can you give me any information as to where I could get catfish to stock a fish-pond? What kind would be most advisable to get? We had carp in our pond, and last winter they were all killed, the water being too low. We like carp well, but one great objection to them is the many small bones they have. I have been thinking of trying catfish, and should like to learn all about them I can.

My bees wintered well, losing 2 out of 84, and a few others were queenless.

LEVI A. RESSLER.

Nappanee, Ind., April 14.

[Can any of our readers answer friend R.?]

TOTAL DEPRAVITY.

A few days ago I was in the office of the Clemons-Mason Com. Co. After a pleasant greeting, Mr. Clemons remarked that he had something to show me; and, stooping down, took from under his table a stone weighing in the neighborhood of 12 lbs., which was one of two taken out of beeswax, the two weighing 21 lbs. He exonerated the bee-keeper of whom he received it by saying that, upon tracing up the matter, he found that he had bought it of a man traveling in a wagon; so the identity of the guilty party is lost. We have heard of individuals whose souls were as small as a lady's thimble; but whoever did this, I am afraid, had even smaller souls. However, while some one would suffer financially the weight of the stone, I think I would rather buy it with a stone in it than tallow. Being ignorant of this latter kind of adulteration, we melted and dipped into sheets a hundred pounds of wax, and tried to make it into foundation, only to fail, after weary hours of hard work. Every soul tempted to adulterate or cheat in any avenue of business ought to read and ponder Ezekiel 18: 30, 31. MRS. MILTON CONE.

Kansas City, Mo., Apr. 10.

[We thank you for your kind closing words, my good friend; and as it will save our readers a good deal of trouble in hunting up their Bibles, we give here the passage you refer to.]

Therefore I will judge you, O house of Israel, every one according to his ways saith the Lord God. Repent, and turn yourselves from all your transgressions; so iniquity shall not be your ruin. Cast away from you all your transgressions, whereby ye have transgressed; and make you a new heart and a new spirit; for why will ye die, O house of Israel?

PHŒNIX, ARIZ.; A GOOD WORD FOR THE COWAN EXTRACTOR.

I am more than pleased with the Cowan extractor. Mr. A. J. King examined it, and he pronounced it *very good*, and he, as you know, is competent to judge. By the way, I am living at present in his house—the same where you visited him last winter. We came to this sunny clime one year ago last December, through the instrumentality of that letter written by Mr. A. J. King (and published in GLEANINGS), in search of health, more especially on my daughter's account, who had been greatly troubled with rheumatism for over six years, being at times so bad that she had to use crutches for six months at a time; and I wish to add that she is much improved, and we entertain fond hopes that, through the agency of this genial climate, she may be restored to permanent health. MRS. M. N. STANLEY.

Phœnix, Ariz., Apr. 12.

YELLOW CLEOME AS A HONEY-PLANT IN ARIZONA.

I herewith inclose some seeds of the yellow cleome, which proves to be so valuable a honey-plant in this vicinity. It is extremely hardy, and grows without irrigation, in which respect it is like the mesquite, and, in fact, next to the mesquite, is my best source of honey. There is, however, nearly or quite a thousand acres of alfalfa within my range; but as it is grown for hay it is cut as soon as the bloom appears, and the bees get in very little work on alfalfa. This plant grows very similar to the mustard, 6 to 12 ft. high, and stalks one to two inches through. Stock will not eat the plant while in bloom, but do eat the seed-pods when ripe, or after frost time. It blooms from the 1st of June till frost, and the bees work on it freely night and morning. The purple variety, or Rocky Mountain plant, is not so hardy, and will not thrive well without irrigation, or in a springy place (*ciruega* land, we call it).

I am anxious for you to test the growth of this plant in your State. If it grows as well there as here, it will be a boon to bee-keepers if sown on waste land. F. E. JORDAN.

Camp Verde, Arizona, April 2.

WHEN EDISON WAS YOUNG.

The following is an extract from *Practical Electricity:*

"I was an operator in the Memphis office when Thomas A. Edison applied to the manager for a position," said A. G. Rockfeller, a member of the Reminiscence Club, St. Louis. "He came walking into the office one morning looking like a veritable hayseed. He wore a hickory shirt, a pair of butternut pants tucked into the tops of boots a size too large and guiltless of blacking. 'Where's the boss?' was his query as he glanced around the office. No one replied at once, and he repeated the question. The manager asked him what he could do for him, and the future-great proceeded to strike him for a job. Business was rushing, and the office was two men short; so almost any kind of a lightning-slinger was welcome. He was assigned to a desk, and a fusilade of winks went the rounds of the office, for the 'jay' was put on the St. Louis wire, the hardest in the office.

"At this end of the line was an operator who was chain lightning, and knew it. Edison had hardly got seated before St. Louis called. The new comer responded, and St. Louis started in on a long report, and he pumped it in like a house afire. Edison threw his leg over the arm of his chair, leisurely transferred a wad of spruce gum from his pocket to his mouth, picked up a pen, examined it critically, and started in, about 200 words behind. He didn't stay there long, though. St. Louis let out another link of speed, and still another, and the instrument on Edison's table hummed like an old-style Singer sewing-machine.

"Every man in the office left his desk and gathered around the 'jay' to see what he was doing with that electric cyclone. Well, sir, he was right on the word, and was putting it down in the prettiest copperplate hand you ever saw, even crossing his t's, dotting his i's, and punctuating with as much care as a man editing telegraph for 'rat' printers. St. Louis got tired by and by, and began to slow down. Edison opened the key and said, 'Here, here! this is no primer class! Get a hustle on you!' Well, sir, that broke St. Louis all up. He had been 'rawhiding' Memphis for a long time, and we were terribly sore; and to have a man in our office that could walk all over him made us feel like a man whose horse had won the Derby. I saw the 'wizard' not long ago. He doesn't wear a hickory shirt, nor put his pants in his boots, but he is very far from being a dude yet."

There are several things in the above account that please me. Edison depended on his *ability*, and not on starched collars nor good clothes. Where one has not the ability, however, it may be well to make up for it in some other way. Another thing: When he saw that they proposed to *crowd* him a little, he did not begin feeling for some tobacco, but simply put

an innocent wad of "spruce gum" in his mouth. What a satisfaction it must be to be able to show to the world we are *not* found wanting when weighed in the balance of public companionship and scrutiny, as was the boy Edison! We should infer from the above that Edison did not use tobacco when a boy, and I sincerely *hope* he does not now.

There is not more than a tenth of the bees alive in this section, and there were a good many kept among the farmers.

Bad Axe, Mich., Mar. 28. H. J. NELSON.

THE HUMMING OF THE BEES.

Inclosed please find a single dollar bill,
For I am bound to be one of GLEANINGS' readers still;
And when I read its columns through, like echoes on the breeze
It reminds me of nectar sweet, and the humming of the bees.

The yellow-jacket builds its nest where scarlet berries grow,
And the white-faced hornet's dome is hidden 'neath the snow;
And as the cold wind chilly blows, among the tall balm-trees,
I often stop to listen for the humming of the bees.

But the summer's coming on, and the asters pink and blue
Will spring up luxuriantly where once the forest grew;
And when I see the bumble-bee swing out upon the breeze,
I think how happy I should be with just one hive of bees.

But they say it is too cold, and the summers are too wet,
And the bees that have been brought here have not succeeded yet;
And when the summer comes to us, and the tall linden-trees
Sow the odor of their blossoms broadcast upon the breeze—

When the alsike and white clover display their creamy bloom,
And the queen of the meadow spreads its blossoms like a broom;
When by the fence the goldenrod is nodding in the breeze,
And beckoning and beckoning for the humming of the bees;

When softly sweep the breezes o'er yon forest-covered hills,
And the trout is swimming gaily in the clear and sparkling rills;
Then I know I shall be lonesome out among the tall balm-trees
When I stop and listen vainly for the humming of the bees.

I love to hear the bluebird in the leafy month of June,
And the robin and the graybird, each with a happy tune;
I love to hear the merry waves as they run before the breeze;
But sweeter music far to me is the humming of the bees.

If you want to hear sweet music, as if an angel's wings
Had softly touched a golden harp, trimmed with a million strings,
Then wander in the forest when the ground is frozen stiff,
And the wind comes rolling gently down from yonder rocky cliff;
And the music you will hear as it strikes the old elm-trees
Is just about as pleasant as the humming of the bees.

Richards Landing, Ont. ARCH. DUNCAN.

HUMBUGS AND SWINDLES.

MUSHROOM-GROWING — LOOK OUT FOR SWINDLERS.

Just as soon as some new industry begins to be developed, especially something pertaining to rural life and rural pursuits, just so soon does a certain class of swindlers begin to dip into it—artificial honey, for instance. Well, the people have already got to work in the mushroom business. A subscriber sends us some circulars headed as follows:

MUSHROOM CULTURE.

With continuous crop, all the year round, from chemically prepared beds, with pulsion and aspiration.

The most profitable investment for people that can devote a few hours daily to this culture.

Originated by
THE FRENCH PROPAGATING CO, New York.
Civil Engineers. *Specialists.*

The words "pulsion" and "aspiration" first caught my attention. Look out for any thing of that sort in the advertisement of something that might be a little suspicious. These people claim to have originated something new. Chemical fertilizers are to take the place of stable manure. Of course, they want some money to start you in the new enterprise. One of the principal points made is, "full instructions with drawings, $8.00." This reminds one vividly of Mrs. Cotton. Next we have "one propagator, $6.00;" next "chemicals, $2.00." Of course, we do not know what the chemicals are; but the price seems to be reasonable compared with the drawings and "propagator." Then follows a great amount of particulars in regard to the large sums of money that can be made by growing mushrooms. Any dark cellar, any unused room, any out-of-the-way cubby-hole will do. Well, this latter part may be true. I feel quite well satisfied that mushrooms can be raised in all sorts of vacant cellars, or even attics; but I do not believe any one will succeed with it unless he has a real love for the business. They talk about $2.50 per lb. for the crop. In our locality, 40 to 50 cts. per lb. is about what we get. But may not these people be straight and honest, after all? Yes, they *may* be; but neither Dun nor Bradstreet knows any thing about such a firm at 215 Chrystie St., New York, nor anywhere else. Another thing, in their private (?) letter they say:

We have selected you, because your letter was the first out of 22 from your county. For $4.00 we will send you full instructions, drawing of your place, directions for shipping mushrooms and spawn, and chemicals for five square yards of bed, thus giving you a chance to convince yourself that this is the most profitable business you ever handled.

They give, as a reason for starting only one person in the county, that overproduction would bring the price "way down." And, by the way, this private letter is a *printed* one, after all. It is a little singular that they should have *exactly 22* applications, and no more, from every county where these printed letters happen to go. I hardly think any of our readers will be taken in with any thing of this sort. There is one thing that puzzles me a little; and that is, their circulars contain some very fine drawings of mushroom-beds, mushroom-cellars, and mushroom-caves—in fact, the very same drawings that we see in the new books recently published on mushroom culture. I do not mean to discourage any one from going into this business. I think it is destined to be a great industry; but please do not think it necessary to send $8.00 for instructions and drawings. We will send a circular, free of charge, such

as we send out with each package of mushroom spawn, to any one who wants it; and if you want the fullest particulars known in regard to mushroom culture, we can furnish the latest books at from 75 cts. to $1.50.

ANOTHER VISIT TO T. B. TERRY'S.

SOMETHING ABOUT DIGGING DITCHES BY STEAM POWER.

In our book on tile drainage, you may remember that friend Chamberlain says he does not know of any machine that has proved to be a decided success in digging ditches for laying tile. In other words, all things considered, an expert man like Chamberlain himself, with the proper hand tools, will dig the ditches cheaper than it could be done, at the time his book was written, by machine power. Of course, circumstances alter cases, and this was the general advice given. Since the book was put out, however, there have been several cases mentioned where tiling was successfully done by means of a steam-power ditcher. One of these is right in our own county—in fact, at our county infirmary—and I have been invited to go down and see it work. We expect to have an appendix to the tile book now very soon, discussing this matter a little further, but where ditches are dug of a depth and width suitable for irrigating and draining the land so that they might be called small canals, instead of ditches, the case is very different. In the desert wastes of Arizona they are all the time making great irrigating canals by means of steam machinery; and right in the same neighborhood where friends Chamberlain and Terry both live, there has been a piece of work going on during the past winter that I propose to tell you something about. I first saw a notice of it in one of Terry's articles in the *Practical Farmer*. The more I thought of it, the more I thought I must break away from business and go and see the machine at work.

Part of friend Terry's farm has been, for the past fifty years, almost if not quite useless because of standing water that could not be got rid of without making a ditch five or six miles in length in order to get the requisite fall. Years ago an attempt was made to do this by hand work and horse power; but it was not a success. During the past winter one of our Ohio manufacturing establishments (Marion Steam Shovel Co., Marion, O.) sent some men out in the depth of winter to put up a machine right in the swamp. They first dug a pit, or pond-hole, which was, of course, speedily filled with water. On this body of water they constructed a sort of boat, or scow, almost 100 feet long, and perhaps 20 feet wide. When the boat was finished, machinery was set up on it, to dig a canal for the machine to sail on. If one were not posted in regard to modern improvements he might take it to be one of the extinct reptiles of former ages—a great big rhinoceros or sea-horse, for instance. Then imagine the thing to have a snout, or rooter, twenty or thirty feet long, with a tremendous backbone to enable it to root in the mud and swamp, and you have it. This great rooter drops into the water with a splash and bang that might almost frighten one. Then it moves forward far enough down into the mud to go under the stumps, trees, and bushes, and finally makes a scoop, hoisting its load high up in the air, swinging it far enough over the banks of the ditch to be sure the semi-liquid mud does not run back again and thus make it necessary to scoop it out a second time, and then you can form some idea of the way the machine does its work. Three or four men operate the huge animal, and a surveyor goes along with the proper instruments to see just when it has rooted deep enough and wide enough; and the water runs into the canal as fast as they dig it, so that the whole thing is floated down stream in a river or a canal of its own making.

A part of the equipment is a dynamo, and electric lamp so disposed that the work, when required, may go on day and night. All that is needed is coal, and this is dumped from the bridge over the canal on the nearest wagon road, right into a flat boat that floats it down to the great "ichthyosaurus" of modern times. While operating this ponderous machinery, some braces, or stays, are run out and anchored securely into the bank of the ditch on either side. One can easily imagine that these stays are the animal's fore feet as it claws them into the mud in order to get a safe foothold while he pushes forward his gigantic rooter. The machine has been at work all through the latter part of the winter, and the canal is now over a mile in length. The machine is off by itself in the swamp, with nothing to betray its presence except the volumes of black smoke that roll forth, and the snort of its nostrils as it gets under an unusually heavy stump or tree, or while it lifts the same aloft in the air, preparatory to dropping it on the bank. The mud and bushes and small trees are not deposited on the bank in a regular furrow, or winrow, for that would not let the water get in readily from the adjoining swamp; therefore this stuff is dropped in heaps, something like little mountains, with valleys or canyons between.

May be you wonder why I go into details in regard to this latter part. Well, the truth is, during the day these aforesaid "canyons," brought some sad experiences. There had just been a tremendous heavy rain in the neighborhood a day or two before our visit. Friend Terry concluded the easiest way to get out into the swamp where the machine was working was to work along this bank of debris. Ordinarily it dries off on top so as to be very fair walking; but at the time we were there it was not *quite* equal to a sawed-stone pavement—that is, not all the way. When we had got almost a mile out into the "wilderness," by much pains and hard work in getting over the aforesaid canyons (carrying rails, bits of board, etc.), we reluctantly decided that it would not be prudent to go any further; and Huber, who had been so animated by the prospect of the visit that he could neither eat nor sleep, was fast losing his enthusiasm; and I myself really feared we should all go down up to our necks, and stick there like so many cabbages. We could not call anybody who lived in the vicinity, and the people on the great rooting-machine, which was yet hardly in sight, could not be made to hear any way. We stopped on one of the dryest of the mounds, and held a short council. Friend Terry said he must take Huber on his back and make a beeline, to the best of his knowledge, for dry ground. It just now occurs to me right here, that I promised not to tell what happened. There is one thing that concerned myself alone, however, that I think I may mention. In our explorations we had found it necessary to carry a couple of sticks, not only to feel our way, but to help us to stand upright in the sinking mud. Well, once I happened to put all my weight on my stick; it treacherously broke in two in the middle, and down I sprawled in the mud and water. I suppose Huber ought to have looked sober while his papa lay wallowing in the mire, but when, in *spite* of all my efforts, I went clear down, it was too much to expect of a boy nine years old.

Pretty soon friend Terry shouted that he

could see a horse eating grass on dry ground. I tell you, I just *loved* that horse. It was "love at first sight" on *my* part; yes, "I loved the very ground *he* walked on." It was *hard* ground —see? We told Mrs. Terry that we should probably be around to dinner by one o'clock; but it must have been about that time when we first got sight of that horse so comfortably located. It did not make *me* sick, because, you see, my "second wind" came in in just the nick of time. Another thing, I did not have to carry Huber. In fact, had Huber and I been alone, I should have had to go somewhere for help. I asked friend Terry a few days ago if it did not make him sick with the hard work he did in carrying Huber through the swamp. Here is the reply he gave me, at the bottom of his postal card:

Sick? Not much I enjoyed "playing horse" with Huber. T. B. T.

I wonder if you remember of my speaking some time ago about some Sterling strawberries I ate one evening when I got in late at friend Terry's home. Well, if you have forgotten the circumstance, I haven't. I am a great lover of fine fruit; but as memory goes back I can not say that I ever enjoyed any fruit more than I did those strawberries on that particular night. Well, after we got in from our raid in the swamp, sure enough there were some Sterling strawberries—some that Mrs. Terry had canned herself; and they had the Sterling look and the inimitable Sterling flavor of those I tasted before, right from the vines. Perhaps several things conduced to make these berries so *very* luscious. In the first place, we were all three tired (just a little) and hungry. Huber was not at all backward in owning up that *he* was *very* hungry, when interrogated. These strawberries are the best tart berry, in my opinion, in the world. They were grown on *clover sod* (of course), and they were canned so as to lose little if any of their color or flavor. After I had eaten one large saucerful I was asked to have some more. When I said I guessed I had had a plenty, friend Terry insisted, and volunteered himself to fill up my dish, and then he poured in a lot of that ruby-colored juice. Said he:

"Friend Root, I never drank any wine; in fact, I am not sure that I know how wine tastes; but if there is any wine in the world that can compare either in looks or taste with this juice from these canned berries, then it *must* be something delicious indeed."

As I sipped spoonful after spoonful, I too concluded that the world might have the wine, so far as *I* was concerned, and I would take my chances with the juice from the canned Sterlings. After dinner we looked over the farm. Oh yes! we did take a little exercise first in getting off the mud; and I was agreeably surprised to find that the sort of mud they have out there does not stick like *Medina* mud; and Robert (Terry's only son) took Huber in hand and polished him up from head to foot, so that even his own mother would hardly know he had been through "the Slough of Despond" that morning. Then the Misses Terry gave us some piano music that I could understand and enjoy every note of, almost as easily as I did those Sterling strawberries but a short time before. Dear me! there was so much that was pleasant *inside* of that Terry house, we shall really have to wait until next issue before we look around *outside*.

I received a sample copy of GLEANINGS. If it is a fair sample of all the numbers, it certainly is immense. I caught several new ideas from the one number. I will send in my subscription as soon as I can. A. C. MITCHELL.

Enfield, Ill., Mar. 27.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

CHEMICAL FERTILIZERS; THE SUBJECT REVIEWED BY CHAS. DADANT.

Friend Root: — In reading, in GLEANINGS of April 1, your article against chemical fertilizers, I was greatly amazed; for I remembered the experiment that you made a few years ago with phosphate of lime scattered on rye, and the wonderful results that you obtained.

I have never been able to use these fertilizers; yet I have studied the experiment made by Geo. Ville at Versailles, France, chemistry having enabled the scientists to determine the chemical elements which compose plants, of which elements four are organic and ten mineral; and experiments having demonstrated that but one of the organic, the nitrogen (or azote), can be exhausted, and that but three of the minerals—phosphorus, calcium (lime), and potassium, are indispensable, the natural consequence was that, as every crop takes from the soil most of the elements of which its plants are composed, the fertility of the ground decreases unless these elements are restored to it—a restoration which is difficult, if not impossible, by manure alone, as a large part of it is wasted, and because the grains raised on the farms are sold out, and the animals are killed far from the soil which has furnished them the material of which their flesh, skins, and bones, are made.

To help the farmers out of this difficulty, about 35 years ago the French government intrusted Geo. Ville with the care of experimenting on chemical fertilizers. This scientist began by sowing some kernels of wheat in chinaware pots, filled with burnt sand, to which he mixed one or more of the chemical elements named above; then he continued for several years on a variety of soils, and with several kinds of plants; and the result was the creation of the business of chemical fertilizers, which spread over both continents.

The experiments of Geo. Ville demonstrated that, if some of the necessary elements are used alone, in a soil which does not contain a sufficient quantity of the others, the result is very little more than if no fertilizer had been used; while, on the other hand, if the other elements are present in the ground, in sufficient quantity, the results are marvelous. Such was the case when you scattered phosphate on your rye.

As the air contains about 79 per cent of azote (nitrogen), the leaves of plants absorb more or less of it. The quantity taken up by the leguminosæ (pulse family) even exceeds their needs, and the surplus is stored in the ground by their roots. Everybody knows that, if an exhausted land is sown with clover, it will recuperate some of its lost fecundity. But the mineral elements, taken away by successive crops of corn or wheat, can not be restored by the sowing of clover, or other plants of the same family, since these elements stay in the earth and not in the atmosphere.

As it would be too costly, if not about impossible, to return these mineral elements to the ground in a pure state, i. e., without being combined with some other substances, it is indispensable that the combinations be made with substances which increase the fecundity of the soil instead of remaining inefficient, or noxious, by decreasing the results anticipated.

For instance, nitrogen can be given to the land combined with sulphur (sulphate of ammonia), or with sodium (nitrate of soda), or with potassium (nitrate of potash). The nitrate of soda is far from being as good as the nitrate of potash; for sodium does not exist in as large

a quantity, in plants, as potassium; and plants find, in every soil, more of it than is necessary.

I notice that Ville recommends nitrate of soda together with nitrate of potash for beets, carrots, etc., while for about all the other plants he prefers nitrate of potash. Besides, he advises farmers not to use one of the fertilizers alone, unless they are satisfied that the other indispensable elements exist in their land in sufficient quantities.

I will add, that Mr. Ville is not opposed to barn manure. On the contrary, he advises its use, together with chemical fertilizers as complement, the one helping the other.

As to your failure with nitrate of soda on onions, perhaps it can be explained by what I wrote above on this compound, or by the absence of other indispensable elements. I have studied the matter, and found that onions, garlic, and other plants of the same family, contain sulphuric and phosphoric acids, and phosphate of lime. Perhaps these acids and salts do not exist in sufficient quantities in your soil. Please try sulphate and phosphate of lime, mixed together and separately; or, if you think that your soil needs nitrogen, use sulphate of ammonia, instead of nitrate of sodium, and give us the results. CHAS. DADANT.

Hamilton, Ill.

[Friend D., it is true I succeeded with chemical fertilizers with rye, and, to some extent, with wheat; and I generally mean to make these an exception when I speak of fertilizers. These experiments were also made before my ground had been repeatedly enriched with stable manure. The point that troubled me was, that fertilizers seem to be of no use on my heavily manured soils and plant-beds. Your suggestion that only four elements become exhausted is new to me; but I now remember that the analysis printed on the sacks of phosphate always mention nitrogen, phosphoric acid, potash, etc., but seldom any thing else. Very likely your explanation is correct. I know this: that guano shows a marked result on our heavily manured plant-beds. The result is more pronounced where it is used in connection with lime. With lime alone, however, we notice but little if any difference, although lime alone is a preventive of the flea-beetle, and also kil s the angleworms in the soil when enough of it is used. I have never been able to discover that it has any injurious effect on *vegetation*, however. I will try to make the experiments you suggest.]

POTATO ONIONS IN SOUTHERN ILLINOIS.

We raise but few of any kind of onions except the potato onion here in Southern Illinois. They should be set late in the fall, and covered with manure, straw, or cornstalks, to prevent from being frozen out. If planted too early, so the tops start to grow in the fall, they will do very little good. When planted in the spring they seem to ripen prematurely, and do not keep well. When planted on rich ground they grow to enormous size, but they are a rather coarse onion, and not very good keepers.

De Soto, Ill., March 14. WM. E. YOUNG.

RAISING ONION-SETS — HOW THEY DO IT IN JERSEY.

You folks out in Medina are "slow" on raising onion-sets. Here is the Jersey plan. In the first place, you want a patch of ground that is well drained; or, better, a patch where the roots of trees are plentiful, such as the south side of a row of apple-trees. The roots draw the moisture out of the ground toward fall, at about the right time for the sets to ripen up nicely. Don't have the ground rich, or they will be stalky. We use, in sowing, Planet Jr. seed-drill, and open No. 5 hole. This will sow them quite thick at a good fair walk.

To keep them over winter, put them on a floor made of shingle laths nailed ⅜ inch apart. I have such a floor in my wagon-shed, which I find just the thing for onions in the fall. To cure them, cut some straw about an inch long, and mix this with the sets, or wheat chaff will do. Also, as cold weather approaches, cover them with straw mats. This is the way I had mine this season, and they are fine. The idea, that Landreth sells onion *seed* for raising sets! I think he is trying to impose on the public.

HERMAN HILLMAN.

Dundee Lake, N. J., March 21.

[Many thanks, friend H. Since you speak of it, I do believe that you have suggested a good plan for utilizing ground that is too poor for any thing else on account of the roots of trees. The only time we have succeeded in raising many nice sets was on some very poor ground, before I had manured it up to its present state. Don't be too hard on the Landreths. It seems to me quite likely some kinds of seeds may be better adapted to ripening up early into mature little bulbs than others; and you know the Landreths have been for years raising onion seed and sets, not only by the carload, but I am told they even load a *train* of cars, sometimes, with onion-sets and nothing else.]

SAND AS A FERTILIZER.

Perhaps some of the veterans may smile when I talk about high-pressure gardening where the soil is fertilized with sand—and sand right from the shores of the lake, at that. Years ago a brother of mine was living on the eastern coast of Lake Michigan. It was not long before he had a piece of land. The Roots always must have some land sooner or later. They would not be *Roots* if they did not love ground, you know. Well, his land was *all* sand; and in order to raise stuff, they went off somewhere and got clay, and drew it in to put on the garden; and they discovered that a little clay would leaven quite a piece of ground. I suppose all this is nothing new to people who live in sandy regions; but those of our readers who have clay soil almost without exception, as in this part of Ohio, will think it funny that one should ever think of going after clay. Well, I have for years been experimenting with sand mixed with our clay soil. I do not like the sand that washes up along our neighboring Rocky River, because it is full of weed seeds. The wash in the river, that changes almost every season in many neglected places, grows rank weeds of tremendous dimensions. If I use the river sand on my plant-beds, it is too much like manure from livery stables. Some little time ago our station agent told me there was a part of a carload of sand that nobody wanted, and that I might have it at almost my own price. I put it on my plant-beds, with marked benefit. In order to keep the surface soil from baking and crusting, I used a mulch of fine sand. This covered up the coarse manure (the surface was sifted, of course, so the manure was in a moderately fine state of subdivision), so as to make the surface of the bed as smooth as a sawed-stone flagging, and so white it made a very pretty background for the plants. Well, half an inch of sand, or a little less, seemed to act beneficially on almost all of our plants. Little plants from seeds can get up through it without hindrance. I would not have more than half an inch, because it dries out. This half-inch of mulching, I think, is just as good as mulch made by raking over the surface of our clay after a rain; and the sand

makes the ground work very much easier. Weeds come out very much better than they do out of the clay. Radishes and other root crops are benefited in many ways. Well, this spring we are trying to push strawberry-plants so as to get runners at the very earliest moment. In fact, we have applied rich old compost all around the plants, and fine manure is almost heaped over the plants to make them boom. Now, imagine my surprise to find, a few days ago, that one of the beds that had a pretty good mulch of pure lake sand was growing with more vigor and luxuriance than any of those in the black manure. I was pointing it out to one of my men, who has a greenhouse and raises roses, and he told me the following:

He had about a hundred three or four inch pots of choice roses that he was trying to push along by giving them the very best of compost he could fix up; but they seemed to lag. Thinking that, perhaps, they needed more dampness, he put about two inches of lake sand on the bench, and set the pots a little way into the sand. After a little, here and there the plants commenced to start with wonderful vigor; then another and another. Finally this unlooked-for sudden start attracted his attention —so much so that he attempted to lift up one of the pots. It was stuck fast! and then he found that the roots of the roses had gone through the hole in the bottom of the pot, and some of them had actually spread out through this moist sand to the length of a foot or more. He was obliged to break the pots open to utilize all the roots belonging to the plant. I asked him if the pots were not so full of roots they were obliged to go through the bottom to get more room; but he said not. They seemed to have a particular fancy for that especial kind of sand. In fact, when they got out of this choice fertilizer into the sand, they began to thrive like pigs in clover. Now, this lake sand contains almost no weed seeds of any sort. It has been washed by the waves so repeatedly that one would think there was no vitality left in it. Can it be that the moisture it held, and the mechanical state permitting the roots to grow at liberty, were the cause of it?

A soil or material that is just right for one vegetable, sometimes does not answer nearly as well for another. For instance, we put too many ashes on a long bed. It stunted and almost killed the seeds of lettuce, cabbage, and cucumbers, while the beet seed all germinated nicely, and the plants grew with unusual thriftiness and vigor. And this reminds me that some one spoke of putting his paper of beet seed on a heap of ashes while he prepared his ground. The wind blew the package over, and some of the seeds went down in the ashes and could not be found. Well, the beets that grew in the ash-heap were not only away ahead of those in his nicely prepared ground, but they were perfectly smooth, while the others were more or less misshapen and scraggly. You see, my experiment corroborates his, that beets will stand almost any amount of ashes.

Now, to get the best results we want an evenly balanced soil. It reminds me of what stock-raisers say about an evenly balanced ration. A few days ago I was feeling bad to find one of my beds so hard and clayey at one end, while the other was a very soft, dark, mellow soil that I thought would be greatly superior for the onion seed I wanted to sow on the bed. I should have had the soil changed, and one end mingled with that of the other, had it not been that the boys had already sown the seeds on the clayey end before I noticed it. I was thinking that, where the rich soil was, containing so much old rotten manure, we should get the earliest onion-plants. Imagine my surprise to find the onions up and growing in the poor end, before they got through the ground on the other. Another thing, when they did come up on the rich end of the bed, there were vacant spaces in the rows. I was showing it to a friend of mine, and he poked his finger into what I called the good soil, and remarked, "Why, there is not enough clay in this to hold the moisture — it dries out too quickly. If you will give this end of the bed a thorough wetting, and give it a little *more* water than the other, you will see it will all come up yet." I did so, and it is just as he said. Now, had we depended on the rain, the soil containing the largest proportion of clay would certainly have given the onions the best start. Of course, we do not want so much clay as to have the ground baked, and form a crust so hard that the seeds can not get through. And this brings out the point that clay land will stand large quantities of stable manure better than sandy soil or muck lands. At one time I was greatly in love with the black peaty muck from our swamp garden; but I have found out that, unless we have frequent rains, this same beautiful muck is liable to dry out so that it is impossible to get it wet again unless we have long-continued wet spells. The beds in that new greenhouse, made up of a pretty hard clay, with stable manure right from the horses, without any straw or litter in it, is giving about the best results, especially for plants where *foliage* is what we want. The house was planted at first almost entirely to lettuce. Every pound of lettuce has brought 30 cts.; and as fast as the lettuce gets out of the way, cabbage-plants, tomato-plants, onion-plants, and almost every sort of plant we have tried, do just wonderfully. This 24th day of April we have green peas ready to pick, where the seed was sown last December. We have just had two cold waves, and cold cloudy weather for a week or ten days. Every thing outside came almost to a standstill, unless there was bottom heat under the beds; but every thing in the greenhouse just moved right along; for with the bottom heat, and a temperature of 60 or 70 degrees overhead, there was not any standing still. After we had decided that all cabbage-plants in the future could be grown outside, we were obliged, in order to fill orders, to clear away a bed in the greenhouse, and transplant the cabbages inside. Like every thing else they just took hold and moved right along; while plants from the same bed, transplanted outdoors, did just about nothing. The weather was not cold enough to kill them, it is true; but they did not go ahead any. They were covered with sash; but what good could sash do when we did not have any sunshine?

HOW TO HOLD A BAG OPEN, ETC.

Our new price lists, as you may have noticed, are now printed on electrotype plates—not on type kept standing until it is old and worn out, as heretofore. The boys have been advocating electrotypes for some time; but I feared it would stand in the way of making frequent changes in prices, and that the electrotypes might be behind, and prevent price lists from going by the first mail, etc. Well, it all went on swimmingly until a few days ago, when the electrotypes did not come (they were made in Cleveland). We sent telegrams, but they did not answer. Mr. Calvert said their fashion was to send the goods instead of answering telegrams, and that the electrotypes would be sure to be on hand by the next train. Sure enough, they came, but we had the usual hitches. The girls could not have the price

lists to stitch and fold, for the pressman did not want to turn them over while they were "green" — that is, before the ink was dry. Then in the morning, when they were turned and printed, we had a cold wave and a snow-storm, even though it was April 15; and the girls did not get around, and I began to crowd things. I told them to have wrappers addressed and stamped, for applications most urgent, so as to go right on the price lists the minute two or three hundred were ready. As soon as the stamp was on, we bundled them into a light soft bag made of stout cloth. This bag is one I use on my wheel. If it is not too full I can shake the mail-matter toward the ends, and squeeze it up in the middle, like a small waist, you know. Small waists are all right for bags, even if they are not for women-folks. All right. Then we just slipped that small waist down into the lamp-holder on the wheel, and it makes a very simple and expeditious package-carrier. There, I have just got ready now to tell my story. You see, this story is one with a long preface and a short moral; but the moral is to come. When one of the small girls was asked to hold the bag so the price lists could be put in quickly, I was going to help her. Did you ever undertake to hold a bag, and find that you needed just one more hand than the orthodox number that God has given us? It takes two hands to hold a bag, and then it will not stay open. I was going to hold the bag open myself, so we could get in the price lists quickly; but Faith (that is the name of the small girl) dextrously slipped one *elbow* inside of the bag; then when she held it open with her two hands there was a three-cornered opening just right to shovel in merchandise. She said she learned it of Miss Cole. Miss Cole bosses the paper-room; and she (Miss Cole) said her father taught her how to do it when she held bags for him to shovel in corn, etc. Now, if our farmer readers knew this before, it may not be any new invention: but I am 53 years old, and have been watching all my life for short cuts in all sorts of farm work; but I never got hold of this little kink before; and I felt ashamed of myself when a little girl taught me something so common-senselike and simple.

OURSELVES AND OUR NEIGHBORS.

Hell and destruction are before the Lord; how much more then the hearts of the children of men? —PROV. 15:11.

A few days ago a newspaper was laid upon my table. As usual I glanced over it hastily to see what passage had been marked for me to consider. While glancing over it my eye accidentally struck upon the following, which was given simply as a piece of news. In the neighboring town of Fostoria, Seneca Co., in our own State of Ohio, a lady teacher belonging to one of the Fostoria schools happened to be off a little by herself on her way home. She noticed a man following her; and, being somewhat alarmed, she hastened her footsteps. He also increased his pace; and she finally, in much fright, started to run. He ran too; overtook her, knocked her down, and robbed her of her pocketbook containing some $20 00. At the time the statement was made she was in a critical state from nervous prostration caused by fright and the blow. Nothing was said about hunting up the perpetrator of this foul deed, and I did not learn that the community rose up, as I think it ought to have done, to demand that this man be hunted up and punished, even if it cost thousands of dollars to find him. In repeating the circumstance I have been told again and again, "Why, Mr. Root, that is nothing particularly remarkable. Such outrages are mentioned in the newspapers every day, and they belong to no particular locality, and no particular locality seems to be entirely free from such terrible events."

May be this is true; but in our own town of Medina no such thing ever happened, to my recollection. We frequently hear of men being knocked down, and robbed of their money. This occurs mostly, however, in our large cities; and, so far as my knowledge extends, such acts of highway robbery are mostly confined to individuals who have thoughtlessly exhibited money where prowlers and thieves might get a glimpse of it. At other times it has been caused by people who persist in carrying considerable sums of money on their person, or keeping it in their houses. For years I have been in the habit of giving our people severe lectures about both of these things; and to set a good example I never carry more than five or ten dollars in money in my pocket at any time. In my recent travels I very rarely carried as much as fifty dollars in money. Most of the time I carried checks in my pocket, of $25.00 each. When one of these checks was exhausted I got another one cashed at the nearest bank. Until within a few weeks ago we were in the habit of paying our help every Saturday afternoon here in the factory. The messenger boy who went to the bank was then obliged to carry through the streets from $500 to $1000. I have scolded about it for a good while. Once or twice during dinner-time I have found the pay money left without being put into the safe. We now cut off all temptation in this line by giving our help a check on the bank, so no money is handled here on payday at all.

I recently saw an account that a member of the famous Dalton gang, with one other man as an assistant, robbed a certain paymaster of two or three thousand dollars, and got away clear. A great crowd of men had been working hard all the week. They had earned the money by the sweat of their face. They were justly entitled to it if ever anybody is ever justly entitled to any thing; and yet this fiend in human form, who had not worked nor sweat at all, could coolly, and without scruple or twinge of conscience, take all their earnings, and use it for the selfish gratification of some low passion. We have been told by scientists and theologians that there is at least a *spark* of something Godlike in the breast of *every* human being. There is no need, however, for any scientist, theologian, nor anybody else, to tell us that there is also something devilish in the hearts of a great part of humanity. Let us now get back to our first illustration:

If there is any class of people in this world who are entitled to the respect, reverence, and careful treatment of the whole human family, it is the lady teachers of our schools. To them are intrusted, next to the mothers of our land, the task of training the children. A great part of this work seems to be falling into the hands of good women, and it is right that it should. Some of the noblest specimens of humanity that I have ever met in the world are among these women teachers. I feel proud to number them among my friends. I feel it an honor that it has been my privilege to assist them somewhat, and to give them my aid and encouragement. God bless the schoolma'ams of our land, as we used to call them. I do not know of any other class of people in this whole wide world who need our prayers, our encouragement, our respect, and our help, as do our lady teachers. The man who would covet their faithful earn-

ings must certainly be down to the very lowest depths of depravity.

I do not know any thing about this woman who suffered this indignity and wrong; but, judging from our own teachers here, and the teachers of my acquaintance, she was most likely a good, pure, high-minded woman—most likely a faithful and devoted servant of humanity. She and the class she represents should have the very best treatment this world can give. When it is needful for them to go out among the world it should be our delight to honor them. If they wish to find health and exercise out in the open air or country, it should be the business of every man and every boy to watch over and protect them—yes, to watch over and protect them as we would watch over a mother, a sister, or a daughter. Many of them, as I happen to know, are looking about and seeking illustrations from nature and art in order that they may interest and teach their pupils understandingly. It should be our delight to help them. "As the twig is bent, the tree's inclined." They should not be poorly paid.

I was rejoiced to find that, in the Pacific States, women teachers are paid much better than we pay them here in the East. When you get a really good, competent, faithful teacher for your children, or for your neighbor's children, do, for God's sake, be liberal toward this teacher. If you scrimp and dicker on every thing else, don't dicker about the wages of your teachers. Pay them liberally—that is, where they are faithful and competent. Have the best, no matter what it costs. Sometimes we say it is better to invest liberally in proper food and clothing than to pay doctors' bills. If this be true, it is a thousand times wiser to invest liberally in means for properly educating your children than to pay the consequences of letting them grow up in ignorance and vice; and this leads in the direction of the man who brutally struck down that woman that he might get hold of her earnings. A big stout man—no, no!—not *man*—God forbid—a big stout brutish fiend in human shape, because he had strength to run *faster* than a poor, weak, helpless, unprotected woman, knocks her down, and robs her of her scanty earnings. Why! ever since I read that paragraph, and while it has been running through my mind again and again, I have fairly boiled over with a desire to try my feeble strength on such a one as he. It seems to me as if God would *lend* me strength, or something *better* than strength, to teach such a one at least some sort of lesson. If energy and fierce indignation in a righteous cause ever lent any man strength, I think it would come to me then.

But yet that is not the thing, after all. It is the same old story. Some temperance lecturer said, that, if every saloon-keeper in our land should die to-night, somebody else right behind him would be ready to step into his shoes; and if all the saloons were not open and running the next day, they would be the day after. If some policeman could be near at hand to shoot down this man in the very act, it would, perhaps, frighten some others behind him, who have the same low purpose in their hearts; but I fear it would not change very much the state of the heart of such people.

There is no use to say these things do not happen often, and that there are so many newspapers nowadays that everybody knows of every thing that is happening. The moral stands out sharp and clear. "Hell and destruction" *are* abroad in our land. Shall we build more prisons, and hang more people? God forbid!

I looked narrowly to see if any thing was said in the paper as to whether this man was intoxicated. There was nothing said about it. If he was, it would explain the whole affair very clearly. In such a case it was *whisky*, and not the man who did the act. The saloon-keeper who sold him his drink, and those who insist that the liquor-traffic is a commendable industry, are *particeps criminis* to the crime. As there is nothing said about his being intoxicated, I think we may take it for granted, at least for this time, that he was not intoxicated—at least, not with alcoholic liquors. Through a fault in education, in bringing up, or from unrestrained vice on his part, he was just that low and brutish, and this case only illustrates the fact that there *are* such in our land, right among us, in our land of liberty. For self-evident reasons, those with such depraved natures keep their inmost thoughts from the light of day; but it crops out here and there too unmistakably to permit us to say there is not much of it in the world. What shall we do? Does God know? And if so, why does he permit such terrible exhibitions of wickedness and sin? We can not answer all these questions; but our text tells us plainly that God does know; and the Bible tells us, too, again and again, where we are to look for the remedy. These exhibitions of evil speak plainer than words, to the effect that even we who profess to be Christians are not working and praying as we ought to do. "God, help," should be the prayer of every Christian in our land, as he sees these things as they come up before him. Then he should be up and doing.

I do not know whether this Home talk of mine will be read in Fostoria or not; but even though I do not live there, I live in the State of Ohio; and every true knight-errant of the cross ought to be ready to spring forth to the rescue of that schoolteacher. I am a good deal in debt, and I have not much money to spare; but I am just now burning for the privilege of putting my hand into my pocket to start a reward, or to help in a reward that may be started already, for the apprehension of the man who did this. I beg pardon again—I did not mean to say "man." Let us get hold of the *wretch* who did this, even though it cost the State a pile of money. Let us convince him that there *is* a God in Israel, and that there *are* Christian people in the State of Ohio. Let every father and mother help. It is a disgrace to our *State* that such a thing happened within its borders. Let us rest not until we follow the thing out to its uttermost limits. Let us have the *history* of this man. Where was he brought up? Can he read or write? Has he ever been to church or Sunday-school? Does he know of the existence of such an organization as the Y. M. C. A.?

By the way, here is a case in hand that it seems to me the Christian young men ought to take up. Several times our Y. M. C. A. has been called "effeminate." Boys, let us show these fellows whether we are effeminate or not. May be they think Christians think it is *wrong* to fight, even in defense of a schoolma'am. I do not know how much my life is worth; but it seems to me I never before felt so much like sacrificing it, if there is *need* of such sacrifice, to redress such wrongs as these. I have heard women reformers sometimes, when they got up into their high flights, say, "Oh! *shame* on the men!" And now *I* say, "Shame on the men," myself included in the lot, if they let this pass and do nothing. I want the W. C. T. U. to help us; and the Endeavor society; and the Sunday-schools; and the ministers of the gospel. Why, if somebody were setting your houses on fire, you would pull off your coats, and fight, the whole of you. But this is *worse* than setting our houses on fire. During this present summer, men and women, and especially teachers and those whose occupation keeps them indoors, are

planning to go outdoors more than they ever did before. They are going to ride *wheels* outdoors. The Columbia people, in one of their advertisements, said the woman who has learned to ride a wheel can go *four* miles or *forty* miles if she chooses, without asking odds of anybody. And what they say is true. Our fifteen-year-old daughter can, I think, ride forty miles without any trouble, on a fair road; but how can she *dare* to go out of sight of her home while brutes in human form are abroad, ready to knock her down if she happens to be out of sight? Our teachers will be afraid to take wholesome exercise if this state of affairs is permitted to go on.

And that reminds me: Suppose, dear friends, that this schoolteacher were *your* daughter. Why, it almost calls forth a groan to think of it. But she is *somebody's* child. She is a child of humanity. She is a child of the *State of Ohio;* and if this should meet her eye, I want to say, "Be of good cheer, daughter. Even though this thing did happen here in our beautiful State, and even though there are among us such as he who did this act, there are also thousands of brothers and fathers who are not only *strong* but *brave.* What you have suffered may have been needed to bring us to our senses. So, be not cast down and afraid. There *is* a God above who knows these things; and in his name we promise you this thing shall not be passed by unnoticed. Look up; go on with your work, and may God speed you."

Dear friends, this is springtime, and a glorious springtime too; but let us not be so busily occupied with our crops and our work at home that we can forget the responsibility that God has laid upon us. Our nation has been more than once redeemed from the hand of the spoiler. More than once have America's sons and daughters laid down the implements of peace and showed the great wide world that we can *fight* as well as pray. A few months ago, a brute under the influence of strong drink presumed to lay violent hands on a little child. I need not tell you the end of this terrible tale. Every man, woman, and child for miles around made it a common business to avenge the little one. The man was *burned at the stake* before the outraged populace had hardly time to say whether it was right or wrong. Good people held up their hands in horror. I do not now mean to say all that was done there was right; but I am glad that, when patience *ceases* to be a virtue, our people can rise up in a body and teach all mankind, at least in one direction, a wholesome lesson. I do not recommend that this man who struck down the teacher should be burned at the stake; but he should be hunted up, if money can find him. It is true, he did not strike a *child;* but he *did* strike an appointed guardian of little children; and he and all else like him should either be converted from the error of their ways, or be shut up where they can not harm and rob the protectors and teachers of America's children.

Please don't stop GLEANINGS, as we all like it very much. My wife says, put in plenty Home Talks and sermons, as she enjoys reading them. Long may you live. W. D. SOPER.
Jackson, Mich., Apr. 5.

L. A. Dosch, in the last issue of GLEANINGS, voiced our sentiments very nearly, only that we want you to keep right on with your "silly religious talks," as long as you honestly believe what you say. We should miss them greatly, for, no matter what other papers we have on hand, or what else there is in GLEANINGS, we read and enjoy those "silly religious talks" first. Your ideas in reference to labor questions and capital we usually indorse, and by no means consider them narrow.
Conneaut, O., Mar. 20. D. CUMMINS.

GLEANINGS IN BEE CULTURE. A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS. ILLUSTRATED SEMI-MONTHLY. 36 PAGES 7×10 $1.00 PER YEAR.

Thou hast loved righteousness and hated iniquity.—HEB. 1:9.

APICULTURAL journalism was never on a higher plane than now, both in quality and quantity.

BRO. YORK, of the *American Bee Journal,* if we mistake not, has just added a new face of handsome type to his paper.

EVERY time the *Review* comes to our table, we make a dive for it among other matter. The last number was an excellent one *as usual.*

THE honor of having the largest house-apiary in the world is claimed by an enterprising Canadian. It is round, having a circumference of 128 feet, and is two stories high. Further particulars will be given later.

THERE seems to be a demand in some quarters for an uncapping-machine. Some time ago we illustrated one, but it was impracticable. Now that electricity is so useful a servant in wire-imbedding, perhaps we can employ it for uncapping. The Rambler and John S. Reese have both suggested an idea that possibly may lead to success. Full particulars will be given in our next issue.

A HINT TO ADVERTISERS.

CATCHWORDS in advertising are half the battle. It is better to use something attractive, odd, or startling in a headline in a small advertisement than an ordinary unattractive card occupying two or three times the space. Take, for instance, "You press the button, we do the rest." It has come to be almost a byword; and yet the happy combination of these words was worth thousands of dollars to the manufacturers of the Kodak camera. As another example we would call attention to the advertisement of S. F. & I. Trego, on page 324. They say, "We are on the lookout," then show a picture of a sailor on top of a mast. We admire the pluck and energy of any firm who are on the lookout for customers—not of the half-hearted sort, but a sort of enterprise that fairly *jumps at opportunities.* As another example of this kind we would call attention to the "ad" on the last cover page of this issue. The catchwords are, "A New Hive." While the W. T. Falconer Co. have not got up exactly "a new hive," there is something so attractive in this headline that people are forced to look at it. If there is any thing that arrests the attention of a bee-keeper, it is a new hive—particularly if it is backed by a reputable firm. There are a good many others of our advertisers who employ skillfully worded lines; but the ones mentioned above are conspicuous examples; and our reason for referring to the matter here is, that our advertisers may thus help materially to increase their net profits. It should be remembered that space costs just so much, no matter what use you make of it. Effective display and appropriate "catchwords" or "catchlines" mean dollars of profit.

MR. HARBISON.

WE are glad to present to our readers, from the pen of our special correspondent, Rambler, a very interesting account of Mr. Harbison, of California fame—his early history, his hive, etc.

You have often heard of the Harbison hive, but few have any accurate idea of its origin, size, and general appearance.

REPORTS, so far as we have gathered them from all over the country, seem to show that bees have wintered fairly well, though not so well as last winter. In some quarters the losses were hardly worth mentioning. It seems to be a singular fact—one for which we can assign no reason—that there has been the greatest mortality in the region of Northern Ohio. We might assign as the cause, our proximity to Lake Erie; but why are there no very great losses in Michigan, Pennsylvania, and New York, that border in a similar way on the great lakes?

WE have just received a new edition of the work, "Bee-keeping for Profit," by Dr. G. L. Tinker, of New Philadelphia, O. This little treatise gives in detail Dr. Tinker's new system of management; the size and shape of his hive, and general information regarding the uses of perforated zinc, of which the doctor makes a specialty. As nearly as we can judge from a hasty glancing over its pages, nearly all the old matter has been retained, with here and there some additions in regard to perforated zinc. A chapter from "Bees and Honey," on the subject of "Pasturage a Necessity," has been added to the book. It is published by G. W. York & Co., Chicago, Ill., of whom it may be obtained.

IT will be remembered that we stated editorially in our last issue, that if R. L. Taylor and the other fellows did not keep still we should be "on their side of the fence." Mr. Taylor, instead of keeping still, has gone and sent in a well-considered article on the hiver and its cost —see page 343. We do not remember whether we were *on* the fence or not; at any rate, we now feel as if we were pretty nearly pushed over on Mr. Taylor's side, and yet—and yet—we can not quite give up the idea that we should *like* to be on the other side. The Pratt hiver worked economically for us last year; and the queens were reared after the swarms were cast. If the new swarm in its new quarters be removed in four or five days, the parent colony will probably rear a queen.

SINCE we shut down on the sugar-honey question in our columns, we have been asked by adherents on both sides to renew the discussion, more particularly as some of the other journals were keeping it alive in their columns. We do not wish to indicate any policy for another paper, but we hardly think it wise for *us* to open the discussion *for the present*. If the production of sugar honey is unwise, as we firmly believe it is, the best way to kill it is to say nothing about it. To vigorously oppose it is, in a certain sense, to keep it alive. The thing that we have to regret is, that it should have been discussed as much as it has in our columns, particularly as more extensive experiments should have been made and a better knowledge of the product secured; for even Prof. Cook, in a card just received, says, "*I am not sure* that sugar honey is what I think it is; that, of course, is to be settled." How much better to have "settled it" before saying any thing about it, and so incurring great risk as to the consequences!

CYCLONES.

BY a letter just received from M. H. Hunt, of Bell Branch, Mich., a manufacturer of and dealer in supplies, we learn that he came very near losing all his buildings by a cyclone that passed by his place on the 12th of last month. A neighbor who lives near him on the east lost all of his buildings and his orchard, amounting in all to something like $5000, with no insurance. Among his losses was an apiary. Not a scrap of the hives could be found, nor even a bee. The track of the cyclone was thirty rods wide, and we are glad to know that friend Hunt was not "in it." On the 8th of April, 1890, a destructive cyclone passed within two miles of our buildings. Houses, barns, orchards, and fences were almost annihilated. Since that time we have carried cyclone insurance. It is terribly hard on a man who has been working the best part of his life in acquiring a property, to have it *all* literally swept away in a moment, with no insurance to look to.

MAKING YOUR IDEAS "GETATABLE."

SOMETIMES our correspondents are a little careless in making themselves understood; and this is true of those who write regularly as well as of those who contribute only "semi-occasionally." In order to get the meaning we have been obliged to read the paragraphs over a number of times, to see what the writer was "driving at;" and even after having dug out the idea, we hesitate to supply a word here and there, to make it plainer, for fear we may make him say just what he did not want to say. Those who are guilty of this sort of carelessness are just the very ones who could do better. We look at it this way: If *we* have to re-read paragraphs, our subscribers, instead of digging out the meaning, will just skip them, and hence just that much valuable space is wasted. A diagram or a rude sketch will help wonderfully many times; and we hope our friends will feel free to add such features to their descriptions, and where practicable we will have them engraved. It should also be borne in mind, that *you* can understand perfectly what you are trying to tell about. After you have finished your description, submit it to some friend; and if *he* catches the idea readily, it is presumable that others will. We do not mean to make this a sort of scold; but ideas should be so worded that the reader will have little or no difficulty in catching the full meaning at once.

But you say an editor is supposed to re-write, re-word, and re-arrange, so that every thing will be plain; but, dear, dear! if the poor *editor* does not know what you are trying to tell, how is he going to do it? He will probably consign what is an otherwise valuable article to the everlasting waste-basket, and turn his attention to something that gives ideas more easily "getatable."

ROOT'S EXHIBIT AT THE WORLD'S FAIR.

WE suppose most of our readers expect to visit the World's Fair at Chicago. We take it for granted that they will, of course, hunt up the exhibit from the Home of the Honey-bees. It is not so extensive as we had originally planned or hoped. We were, in the first place, limited to about 4 x 8 feet, but we complained that it was no use making an exhibit in such a space as that. It was then enlarged to 8 x 14 feet; and even then we felt that we were being cramped, as we desired to send a carload of goods of our own manufacture. But the secretary of the Department of Agriculture informed us that, by reason of the great number of applicants for space, he would *have* to limit us to that space or nothing. We prepared an exhibit, and have recently sent it to Dr. Miller, who is to set it up in a few days after a photograph we supplied him, and incase the whole thing in a showcase, or, rather, a sort of glass house. The exhibit comprises nearly every article we manufacture, and *all* distinctly relating to apiculture. A conspicuous feature of the

exhibit will be a large water-color painting, 25 x 40 inches, giving a birdseye view of our manufacturing plant. The picture has been pronounced, by all who have seen it, to be exceedingly accurate: and those who visit the World's Fair will have not only a chance to see the external appearance of the Home of the Honeybees as it is, covering as it does so large an area, but a sample of all the goods manufactured therein. The painting has just been completed, and is made with the special object of exhibiting the same at the World's Fair. We shall doubtless give our readers a half-tone reduced engraving of it. But a reduced copy in one color does not begin to express its lifelike proportions. The artist, we are proud to say, is a Medina County man, and is a relative of two of our employes.

The location of the exhibit is in the Agricultural Building, in the gallery of the second floor, in section 33, H. It is shown along with exhibits of a similar character, and we think there will be no difficulty in finding it.

SEALED COVERS; THE FINAL STATEMENT OF THE CASE.

In response to our request in a couple of issues back, we have received scores of reports giving comparative tests between colonies under sealed covers packed in chaff, and colonies similarly packed with absorbing cushions or upward ventilation. We have given a few of the reports as they happened to come in elsewhere, as average samples. The results, as reported, show that bees have been wintered successfully both ways; but the evidence taken as a whole seems to indicate that the absorbing cushions, or upward ventilation, gives the better result. In some quite marked instances there is quite a decided difference in favor of absorbing cushions. We notice that the reported mortality, in some instances at least, under sealed covers, is due to the fact that the moisture, not being able to escape upward, runs down on the inside of the hive, on the bottom-board, to the entrance. There, coming in contact with the cold air, it freezes, and seals hermetically the only opening to a supply of fresh air. The result has been, that such colonies die, as a matter of course; and as warm weather comes on, the entrance thaws out before the apiarist gets around to ascertain the cause. Upward ventilation, on the contrary, will, of course, save such colonies; but absorbing cushions often become wet and soggy; and if they are left on the hives without being dried out during winter they are worse than nothing. It becomes evident, then, that, in order to have the best results with the absorbing cushions, there should be a free circulation of air over the top, through ventilators sufficiently ample. It is never the thing to do, to place a telescopic cover (without ventilators) over the absorbing cushion so tight that there is no escape for moisture. Such cushions invariably become practically water-soaked; and the colonies under them will be quite likely to die.

Now, although we have said a good deal in favor of the sealed cover, in the last year or so back, what we did say was more to stimulate experiment along the line that we thought might develop something valuable; but the scores of letters show that the old absorbing cushion, with its upward ventilation, is the more reliable plan for outdoor wintering yet.

So far, in our A B C of Bee Culture we have not given one hint that there was any such idea extant as the sealed cover. Indeed, the directions through all this time have been to use absorbing cushions. We go on the principle that it is better not to recommend a new plan to beginners, and, in a general way, text-books, until we have ample evidence that it is superior to the old. So far as beginners are concerned, and those who look to their elders for instruction, no harm has been done.

A PANORAMA OF THE NOTABLE OBJECTS OF INTEREST IN THE WORLD.

We have just received from the publishers, Mast, Crowell & Kirkpatrick, of Springfield, O., a wonderful book. It contains over 500 photographic views, 11½x14 inches; and these views, by the way, are of the highest order of art that photography has ever yet aspired to. A large portion of them are from the Old World; yet quite a number of them are lifelike, familiar scenes from our own land. Mrs. Root and I went over some glimpses from California, until it seemed as if we were back on the old familiar spot. We showed the children the hotels where we had stopped, the mountain-peaks covered with snow, the waterfalls we had visited, etc. The glimpses from the Holy Land are especially valuable. From all pictures of the pyramids I had previously seen, I supposed they were made of hewn stone throughout, something like the steps to the public buildings in our great cities. The camera, however, with its unerring fidelity, reveals the fact that the great pyramid is now, after a lapse of about 40 centuries, what we should call a great stone-pile.* Of course, they were once blocks, each block reaching up to a man's arms; but the action of the elements, after so long a time, has done its work, as with thousands of other things. Wood-cut engravings have many times given us erroneous conceptions; but the faithful camera tells the truth. The photograph tells no lies. The subjects are written up by Gen. Lew Wallace, Edward Everett Hale, Washington Gladden, and others. Many of the pictures are reproductions of paintings that are valued away up into the thousands. I was especially interested in a couple of companion pictures representing Abraham and Sarah turning away Hagar and Ishmael. It is a nice book to look over on Sunday afternoon, while you tell the children Bible stories. I do not know what the book costs. I have been told that it is sold only by agents.

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* SOMETHING MORE ABOUT THE PYRAMIDS.

Since the above was written, our stenographer, W. P. Root, furnishes the following:

The outside of the pyramid of Cheops is not the same now that it was when finished. What now look like steps of stairs on each side were at first filled in with three-cornered stones, commencing, of course, at the top, and working downward, thus leaving the pyramid as smooth on the outside as any surface of stone could possibly be made. This will be made plain by the figure above, where the zigzag mark represents the present surface, and the straight line the outside as the builders left it. At a comparatively recent date the Arabs pried these stones from their places and used them for building palaces, etc., in Cairo, within sight of the pyramids toward the east. As Egypt has neither rain nor frost, the elements have made no marked change in the general appearance of this greatest of all human works. The beauty of the pyramid, so far as its masonry is concerned, is all on the inside, in the wonderful galleries, where the immense blocks of syenite are cemented together in the strongest manner with a layer of mortar scarcely thicker than a coat of paint. A thoughtful person can not help thinking that, if man has emerged from a state of animalism, it is strange that this great monument, which appears at the dawn of human history, is a model that man to-day can not surpass, and probably can not even imitate in any particular. It is built on geometrical principles that offer no room for improvement. It contains 85,000,000 cubic feet of stone—enough to pave a road 17 feet wide and a foot thick a distance of 947 miles.

TRADE NOTES.

TAYLOR'S COMB-LEVELER; A MISCONCEPTION CORRECTED.

Since our article under this heading, in our last issue, we have received the following from Mr. Taylor, which will explain itself:

Friend Root:—In speaking of the use of the handy comb-leveler, in April 15th GLEANINGS, you say:

Although we have never tried it, we presume it is a fact that the bees will build out these combs, reduced to foundation again as rapidly and perfectly as they build from regular foundation; and probably no one could detect, after the combs were finished and capped over, those that were built from leveled down combs and those from foundation.

This leaves the impression that all that is gained by the use of the leveler is the saving of the foundation originally used in them. Now, I confess to being greatly surprised at this explanation. Why, there is no more reason for reducing the combs to foundation again in sections than there would be to reduce extracting combs to the original foundation after each extracting. Already I have received inquiries as to whether the cells could not "be left deeper." Mr. Root, these sections of empty combs, if used rightly, are nearly equal in value to sealed combs of dark honey, at least; and I believe sections of dark honey can be extracted, and the honey sold as extracted, or used for feeding; and the empty leveled combs kept over to be quickly filled again with white honey with greater profit. Oftimes bee-keepers have many sections filled with honey-dew that is not fit for table use. Extract the honey from them and use it for spring feeding, and you can have the empty combs filled with clover or bassswood honey, even in a short honey-flow; and in half the time that the same work would be done on new foundation.

Last year I used about 2000 such combs. They were in 24 section cases; 12 empty combs, and 12 sections filled with new foundation. The honey-flow, both clover and basswood, was short and meager; yet the combs were nearly all filled and sealed, while there was not a single section of foundation finished fit for market, right in the same cases. Most of them were nearly filled with comb and honey, but not sealed. I extracted them and sold the honey for 12½ cts. per lb. I now have the empty leveled combs ready for the white-honey flow of 1893, and I know I have in them property of great value.

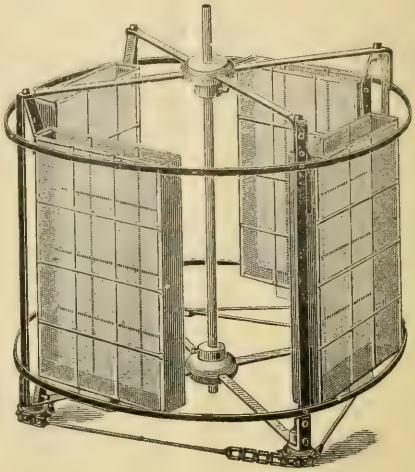
Now, I should like the readers of GLEANINGS to hear this explanation, as I see by two letters received to day that bee-keepers are being misled by the idea that the combs are reduced to the original foundation, whereas they should be left as nearly full depth as possible, and have the surfaces level and of equal depth. B. TAYLOR.

Forestville, Minn., April 24.

We are very glad to be corrected. In our hurry we failed to catch on to the real purpose of the comb-leveler, and we trust the above will make it all plain now. Yes, indeed, the instrument would have a much more valuable use in reducing cells to as deep a level as possible than reducing them to the depth of ordinary foundation.

FOUR AND SIX FRAME COWAN EXTRACTORS.

Our four and six frame Cowans, while similar in principle to the two-frame machine, differ in having a center-shaft and in having each basket geared with a chain, so that the reversal of one basket reverses them all simultaneously. Indeed, it is not even necessary to stop the extractor. All that is required is, to slow up the motion a little, so that the hand can catch one of the baskets, and retard its outer edge while the reel revolves. The inner edge of the basket being thrown past the center, the centrifugal force will carry it the rest of the way, and the reversal of all the baskets is accomplished much more expeditiously and easily than with the so-called automatic reversing machines. The baskets are thoroughly braced, and there is not the slightest danger of heavy combs bulging them, and they are hinged in such a way as not to interfere with each other, nor to fly off the hinges entirely, as is the case with some reversibles. There are no chains — no hitching nor catching of any kind, for the reversal of motion is positive.



INSIDE VIEW ONLY.

The cross-arms of the reel are made of wrought iron, cast into a solid hub, and there is no possibility whatever of their getting loose. Of all things that are annoying, it is to have extractors break down or give out, right in the height of the honey season.

Besides all the other features of the Cowan, the crank can always be run one way. Another feature is, they do not throw honey over the sides.

SPECIAL NOTICES.

WHOLESALE PRICES TO DEALERS.

We have sent out, during the past week, wholesale price lists to dealers who advertise and sell any thing that we manufacture or job. If any who are entitled to these lists have been missed in the distribution, we should be pleased to hear from them.

MAY EDITION OF OUR CATALOGUE.

We have finally completed the resetting and electrotyping of our catalogue, and are now printing it entirely from plates, and mailing it as rapidly as possible to our old customers and those who apply. We have made it of especial value to beginners by incorporating directions, and answering questions most frequently asked.

We have made a slight reduction in the prices of 24 and 48 lb. shipping-cases. The 24-lb. single or double tier are $10.00 per 100 in the flat; and the 48-lb., $12.00 per 100; in lots of 10, 2c each extra. The 12-lb. 3-row case is 80c for 10, though printed in error 40c.

SAFETY BICYCLES.

A month ago we called attention to the Lovell Diamond Safety bicycle, agreeing to send catalogue with special price on application. We were daily expecting our supply of catalogues then, and we regret to say our expectations have not yet been realized. The manufacturers claim to have sent us a supply, and we shall, no doubt, receive them shortly. As soon as they come we will break the spell with those who are patiently waiting, and any others who have not yet applied, but are interested enough to do so.

If any prefer the Victor or Columbia, the two leading wheels, at $150, we can supply either, but

without any reduction. We have a model B Victor, bought last August, that is in excellent order, that we will sell for $125. It is a very strong wheel, weighing about 42 lbs., geared to 54 inches. Victor catalogues, describing this and other models, sent to those interested.

We can furnish 2-oz. bottles of best cycle oil at 10c, or 60c per dozen bottles.

COMB FOUNDATION REDUCED IN PRICE.

It is rather unusual to reduce the price of an article right in the midst of the season; but on consultation with the Dadants we have decided to reduce the retail price of comb foundation 3 cents a pound, beginning with May 1st. No doubt most if not all the other dealers who have been quoting the same prices will make a like reduction. Our table of prices will, therefore, be as follows until further notice. Those who order at the old price will receive extra fdn. to make up for the amount of the reduction.

NAME OF GRADE.	Sq. ft. per lb.	Price per lb. in lots not less than 1 lb.	10 lbs.	25 lbs.	50 lbs.	100 lbs.
Heavy brood fdn....	4 to 5	42	41	40	39	38
Medium " "	5 to 6	42	41	40	39	38
Light " "	7 to 8	45	44	43	42	41
Thin surplus "	10	52	51	50	49	48
Ex. thin " "	11 to 12	62	61	60	59	58

COMMON-SENSE PUMP.

We have been offering this pump, in connection with our other spray pumps; and, considering its value and the price at which we offer it, I am surprised that we do not receive more orders for them. It is a really valuable instrument. One customer writes that it is worth all it cost, to amuse the children if for nothing else; but that is only an incidental use. We have been trying it with a piece of ⅜-inch rubber tubing 8 feet long, instead of the 5-inch piece that goes with it. The nozzle on the end of the tubing is attached to a stick, to give direction to the spray; and by means of this you can reach any part of a high fruit-tree; but to operate effectively it requires two persons; or, if the pump is attached to the pail so as to hold it securely, one person can manage it. We can furnish ⅜-inch tubing for extension, at 15 cts. per foot. The pumps, we furnish at 60 cts. each, or $1.00 postpaid. By the dozen, $6.00, or three dozen for $16.00. These pumps sold at retail at $2.00. We sold them last season at $1.00. We secured about 300 of them at two-thirds regular prices, and offer them at above prices. We can furnish a good quality of either ½-inch or ¾-inch rubber hose at 20 cts. per foot; or in 50-foot lengths at 16 cts. for ½-inch, or 17 cts. for ¾-inch. These are to use in connection with the Myers bucket or barrel pumps.

SCABBY POTATOES.

T. B. Terry, working in concert with some of the most intelligent professors of our experiment stations, has, so it seems, found a remedy for scabby potatoes—at least, he planted a good many bushels of the worst scabby potatoes he could find last season, and harvested a crop entirely free from scab. The scabby seed potatoes were soaked in a solution of corrosive sublimate—2 ounces to 13 gallons of water. Some of the same potatoes, planted without being treated to the sublimate, yielded a crop almost entirely scabby. Full particulars of the way he managed, and, in fact, a chapter covering the whole subject, will be sent to those who send 40 cts. for the new edition of the potato book. This chapter on scabby potatoes will probably be ready to send out about as soon as this reaches you. It is thought best to plant the treated potatoes on ground that has not produced scabby potatoes the year before.

STRAWBERRY-PLANTS IN THE SUMMER TIME.

We are now sold out of Parker Earle and Sterling; but we have a great lot of thrifty strong plants in our plant-beds, 18 inches apart, put out last fall expressly to furnish early plants this coming summer. In order to get plants at the earliest possible time we pick off every blossom as soon as it appears, and crowd the plants with tremendous quantities of the best stable manure, and water when needed. We expect to get runners out and plants rooted in June, and think we shall be able to fill orders with new plants early in July—possibly some the latter part of June. Now, if those who send us orders late in the spring will specify whether they would like these young plants as soon as they are ready, providing we are out of the old ones, we can have orders booked ahead. While our supply holds out we have been in the habit of filling orders for plants until they were in full bloom, and sometimes with berries on, in order to accommodate customers. But I think it will be very much better to get these young plants rather than to use old ones that have put out buds and blossoms.

VEGETABLE-PLANTS MAY 1.

Of asparagus roots we have a great plenty, and experience in former years has told us that they may be planted safely all through the month of May. Even if they have considerable shoots they may be pulled off, and yet seem to grow just as well as before.

On cabbage-plants we are at present date sold out, and orders ahead. We have thousands of little plants, but nothing big enough to send out that is not already ordered. This is a bad state of affairs, I know; but the orders for Jersey Wakefield have been unprecedented. We are doing our best to catch up, and are even putting little plants in the greenhouse to-day, April 28, as we find they get along much faster when they have bottom heat. Our greenhouse, you know, can be made all outdoors in a twinkling, and as quickly closed up when the weather changes.

Cauliflower-plants are a good deal in the condition of cabbage.

We have a pretty fair stock of onion-plants, with the exception of the Prizetaker. The latter are like the cabbage-plants.

Of lettuce-plants we have a very fair stock for small orders.

Tomato-plants, we have a magnificent stock of Beauty, Ignotum, and Dwarf Champion. In fact, we have a fair lot of all three that have been twice transplanted. We also have a good stock of Extra Early Ruby.

Celery-plants, we are tolerably well supplied with White Plume and Self-blanching.

Pepper-plants we have none large enough to send out.

Sweet-potato plants we have in great abundance, both sweet potato and the best kinds of yams. Last year we were behind on sweet-potato plants all through the season, and thought we would not be caught that way again; and now we have, the first of May, more than I am afraid anybody will want. Last year it was just the other way with cabbage-plants; so you see "you can't 'most always tell" just exactly what *will* happen in the plant-business.

To save you the trouble of turning to our catalog for prices, we may mention onion-plants, 15c per 100; $1.00 per 1000. Tomato-plants, 10 for 10c; 75c per 100; $6.00 per 1000. Celery and sweet-potato plants, 5c for 10; 40c per 100; $3.00 per 1000. If wanted by mail, add 5c for 10, or 25c per 100 for postage; on onion-plants, 10c per 100 for postage. Extra-strong plants, produced by an extra transplanting at a greater distance apart, double the above prices.

Strawberry-plants are about all sold out except the Haverland and Bubach; and we have not a very large stock of either of these.

Oregon and Washington Bee-keepers

We have decided to give a

BIG DISCOUNT

for early orders. Write for special prices, naming quantity you can use.

POSSON'S SEED STORE,
Portland, Oregon.

6 9db

Dr. J. W. Crenshaw, Versailles, Ky.

Breeder of Italian Queens. Imported or home-bred mothers, as desired.

Untested, till July 1, $1.00; after July, 75c. Contracts solicited. **Dealer in A. I. Root's Supplies.** Grower of plants of every description. Onion Plants. Celery Plants. Send for circular. Mention GLEANINGS.

5-14 db

FOR SALE. ONE AUTOMATIC V-GROOVE SECTION-MACHINE, IN NICE WORKING ORDER.

One cutter-head machine, never used but a short time. **S. D. BUELL, Union City, Mich.**

Pansies. I have an immense stock of large beautiful plants, raised from the finest seed in the market, which must be sold at once. In order to get them off I will offer them for the next 15 days at $2.00 per 100, 50 for $1.00, by express; or by mail, postage paid, 25 for 65 cts., 50 for $1.25, 100 for $2.40. This is a rare chance to get plants at almost the price of good seed. I guarantee safe arrival.

J. F. Rosenfield, West Point, Neb.

☞In responding to this advertisement mention GLEANINGS

FOR SALE!

An Apiary of 100 Stands of Bees in a Fine Alfalfa Range.

Also 90 acres of fine fruit land, as one or in small tracts for fruit-farms. Address

MRS. A. A. HODGDON,
Delta, Delta Co., Colorado. 9-10d

WANTED—**Your address** on a postal card, to receive the *Am. Apiculturist* *FREE THREE MONTHS.*

Address *H. ALLEY, Wenham, Mass.*

☞ responding to this advertisement mention GLEANINGS.

Root's Goods for the West.

Address Jos. Nysewander, Des Moines, Ia.

Headquarters in the South for

BEE-KEEPERS' SUPPLIES.

DOVETAILED HIVES, SECTIONS, COMB FDN., EXTRACTORS, &C. ITALIAN QUEENS, NUCLEI, &C. SEND FOR PRICE LIST.

P. L. VIALLON MFG. CO., BAYOU GOULA, LA.

DON'T MONKEY with cross bees. Our Golden Queens, untested, in May, $1; 3 for $2.50. Tested, $1.50; 3 for $4. Nuclei and full colonies at low figures. Send for price list, supplies, etc.

John Nebel & Son, High Hill, Mo.

Leininger Brothers WILL SELL **Italian Queens**

And Nuclei Cheap. Send for Prices.

Fort Jennings, Ohio. 7tfdb

Central Bee-Hive Factory

And Bee-keepers' Supply-house of Illinois. Write for Catalogue for 1893. Address

F. N. JOHNSON, P. O. Box 137, Knoxville, Knox Co., Illinois.

8-13bd

A large number of fine queens on hand; yellow and prolific; ready April 15th; warranted queens, $1; 6 for $4.50; select tested, yellow to the tips, suitable for breeders, each, $2. Reference, A. I. Root. 3tfdb

W. H. LAWS, Lavaca, Seb. Co., Ark.

FOR ALL KINDS OF BEE KEEPERS SUPPLIES. ADDRESS LEAHY MFG. CO. HIGGINSVILLE MO.

In writing advertisers please mention this paper. 21tfdb

DOVETAILED HIVES, SIMPLICITY HIVES,

SECTIONS, EXTRACTORS, ETC.

A FULL LINE OF

BEE-KEEPERS' SUPPLIES.

60-PAGE CATALOGUE. 1tfdb

J. M. JENKINS, WETUMPKA, ALABAMA.

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PURE WYANDOTTE **EGGS** FOR HATCHING, $1.00 FOR 13.
Ref., A. I. Root. J. S. MASON, MEDINA, O.

EARLY QUEENS.

All Italians. 3 and 5 Banded.	May	June and after
1 untested queen	$1 00	75
6 untested queens	5 00	4 00
1 tested queen	1 50	1 50
3 tested queens	4 00	4 00
Select tested	2 50	2 50

Two-frame nuclei with any queen, $1.50 each extra. Safe arrival guaranteed.
W. J. ELLISON, Catchall, Sumter Co., S. C.
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Sprouted Peach Seeds

at 15c per hundred by mail, or $1.00 per thousand by express. DR. J. M. MARTIN, Mercersburg, Pa.
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WE OFFER
COMB FOUNDATION
WHOLESALE AND RETAIL,
AT VERY LOW PRICES.
Satisfaction and all work guaranteed.

Price List and **samples** will be ready before the next issue.
Send for them.
Prices will range from 36 to 56 cents per lb., f. o. b.
BEESWAX WANTED. Write for prices.
W. J. FINCH, JR.,
931 E. Monroe St., Springfield, Ill.
In responding to this advertisement mention GLEANINGS.

Did You Know
That my 44-page Catalogue is now ready? I have the largest stock of Bee-keepers' Supplies in New England, at prices away down. My brand of XX White Thin Foundation, 12 feet to the lb., is the finest in the market (so say my customers). Just send a postal for samples and prices, before you forget it. Address
7tfdb WM. W. CARY, Colrain, Mass.
In writing to advertisers please mention this paper.

Free! One untested queen Free, in June. Send for circular, and learn terms. Circular gives the best way to introduce queens, price of nucleus, etc. 1 untested 5-banded queen, in May, $1; 6 for $5.
Circular free. 7-10db
J. F. MICHAEL, GERMAN, DARKE CO., OHIO.
Please mention this paper.

Jennie Atchley
Is headquarters in the South for queens. Untested (either 3 or 5 bands), March, April, and May, $1.00 each; $5.00 for six, or $9.00 per doz. June and after, 75 cts. each, $4.25 for six; $8.00 per doz. Prices for breeders, and by the quantity, on application. Safe arrival and satisfaction guaranteed.
Jennie Atchley, Greenville, Hunt Co., Tex.
Please mention this paper. 6tfdb

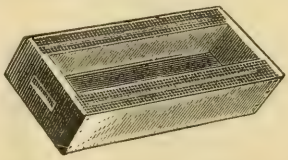
Bees By the Pound, Nucleus, or Colony. Address OLIVER FOSTER,
8-tfbd Mt. Vernon, Linn Co., Iowa.

Beautiful Golden Queens.
My five-banded Italians are bred from the very best of stock by Doolittle's improved methods, and mated to the yellowest of drones from selected colonies, and I guarantee them to give entire satisfaction. Untested queens are all warranted purely mated. 1 untested queen, March, April, and May, $1.15 each; $12.00 per doz. Tested, $1.50 each. Select Tested, $2.50. Guarantee prompt and safe delivery. Send for circular. W. P. CROSSMAN,
Money-order office. Ballinger, Tex.
Reference: 1st Nat. Bank of Ballinger. 5tfdb

CHICKEN-HATCHING BY STEAM

IMPROVED VICTOR INCUBATOR.
Simple, easy of operation, self-regulating, reliable, fully guaranteed. Send 4c. for illus. Catalogue. Geo. Ertel & Co., Mfrs, Quincy, Ill. U.S.A.

A. E. MANUM'S LEATHER-COLORED ITALIAN QUEENS
Are superior to all others for business, is the verdict of those who have them. PRICES: one untested, $1; six, $5.50; twelve, $10.00. Tested, $1.50 each. Selected for breeding, $2.50 each. One yearling, tested, *in June only*, $1.00; six, $5.50; twelve, $10.00.



THE MANUM FEEDER.
Models of Manum's new "Rapid" feeder with, full printed directions how to make, and what, when, and how to feed for best results, $1.00 by mail, postage paid. Descriptive catalogue mailed free on application. 5-12db
A. E. MANUM, Bristol, Vt.

SUPPLIES.
Large illustrated catalogue free; or send 10c in stamps for *THE BUSY BEE*, a book telling how to manage them.
WALTER S. POUDER, Indianapolis, Ind.
4-12db 175 E. Walnut Street.

BUY your HIVES where lumber is cheapest. That's at LeSueur, Minn. Catalogue free.
5tfdb F. C. ERKEL.

Eastern Supply House.
We furnish everything used in the apiary, and at bottom prices. Illustrated circular free.
I. J. STRINGHAM, 105 Park Place, N. Y.
21-20db Please mention this paper.

Cash for Beeswax!
Will pay 23c per lb. cash, or 26c in trade for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 29c per lb., or 33c for *best selected wax*.
Unless you put your name *on the box*, and notify us by mail of amount sent, I can not hold myself responsible for mistakes. It will not pay as a general thing to send wax by *express*.
A. I. ROOT, Medina, Ohio.

KIND WORDS FROM OUR CUSTOMERS.

I send you to-day my renewal to GLEANINGS, and I wish you to place the letter *C* to my name (*Continue*) and not *D* (*Discontinue*). I have every number from No. 1 Vol. I. to the last issue, and don't propose to stop taking it for the next twenty years if I live that long, for I have received ample compensation, *morally* and *financially*. SAMUEL C. WARE.
Towanda, Ill., March 24.

Your last order sent me arrived all right; and to say that I am pleased does not half express it. I have the whole order put up, and not a mistake in the whole lot. If you don't stop sending out such goods you will surely have to enlarge that big plant. I believe Pratt has the key to automatic swarmers, and I shall give them a thorough test. My pets are very quiet in the cellar, while the two in Dovetailed chaff hives, outside, are all right yet. Those D section-cases are the neatest thing I ever saw, and are especially adapted for my retail trade.
Lac-qui-Parle, Minn., Mar. 26. W. E. L. MILLER.

OUR SEWING-MACHINE AT $17.00 EQUAL TO OTHER $65.00 MACHINES.

The sewing-machine you sent me is "just splendid." Mrs. B. likes it very much. It runs nicely, and does good work. There are some more of the boys here who will want machines as soon as they have the money to spare. They have been in the habit of buying on the weekly-installment plan. Some pay $65.00 for a machine no better than this one at $17.00. CHAS. BIERY, Express Ag't.
Northville, Mich., Apr. 8.

OUR GARDEN SEEDS.

Friend Root:—You may think it extravagant for me to pay expressage from Medina on seeds, and I might say it's none of your business; but I'll be more polite, and tell you I think I make money by it, for two reasons. One is, I get seeds true to name; the other is, I get good seeds that will grow, with a decent chance. It's poor economy to save five or ten cents on a package of seed, and then have big gaps in your rows where the seed didn't come, or else have something come you didn't want. The comfort I feel after I've got off an order to you for garden seeds, in the feeling that they'll be all right, has a cash value that's not to be despised.
Marengo, Ill., April 18. C. C. MILLER.

TASTING THINGS BETWEEN MEALS, ETC.

I've just read your most excellent article on health, and I indorse every word. I have observed strict care in diet. I haven't eaten a lunch for many years, and I have often picked 130 quarts of strawberries in a day, but never ate *one* except at meals. I know it's very hurtful, and it's very bad to be varying in meal times. I often hear people say, "Oh! give me fat living and I'll die the sooner;" and yet, how soon they call the doctor! I try to abide by nature's laws so I can glory in all I do, in the woods, in the garden, amid the fruits and flowers. How I do wish I could see you, and have you take a stroll among my fruits, etc.! E. P. CHURCHILL.
Hallowell, Me.

A KIND WORD FROM A FARMER'S DAUGHTER.

Editor Gleanings:—Your journal has, by its gentle visits, been a source of pleasure to an unknown reader, who is not a subscriber, some of my relatives being subscribers. I have enjoyed the privilege of reading your valuable paper since I have been old enough to comprehend the real benefits to be derived from a faithful *Christian* pen; I have now had the pleasure of seeing each journal, as it was issued, for the past two years. My sister has become one of your subscribers. I am not particularly interested in the culture of bees; but there is enough else of interesting matter which GLEANINGS contains and bears, even to a saddened home. The best of all is "Myself and My Neighbors" The latter is what prompts the anxious watch for the faithful visits of your paper. I can not and will not try to depict to you the pleasure that has been afforded one who, in the ignorance of its editor, has been reaping *stolen* GLEANINGS. I will only say, that, in joy, GLEANINGS is a benefactor; in grief, it is a comforter. In this I hope I have in nowise infringed upon the good nature of its editor by trying to express my sincere regard for the bee-journal that does not neglect to brighten the home of a farmer's daughter.
Jan. 14. M. V. V. M.

THAT HEALTH-TALK.

Amen, Bro. Root! That health-talk in GLEANINGS for Jan. 15 is to the point. Only by discrimination in diet can I keep on my feet. Coffee with milk I never use. I use *much* honey, but never with apples or such fruits, while "pumpkin pie" I forego. I must use food in proper combination (to avoid fermentation), or be in constant misery. Surgeons and physicians are all right as experts in cases of accident, or in extremity. Accidents will occur, and surgeons be needed; but other sicknesses are about on a par with the principle of manufacturing liquors and drinking the same because the grain used helps the farmer by consuming his product, the distilleries and breweries by employing laborers, and the civil revenue received from the business, then building Keeley institutes, and employing physicians to cure the diseases arising from the use of the liquors. R. C. AIKIN.
Loveland, Colo., Jan. 22.

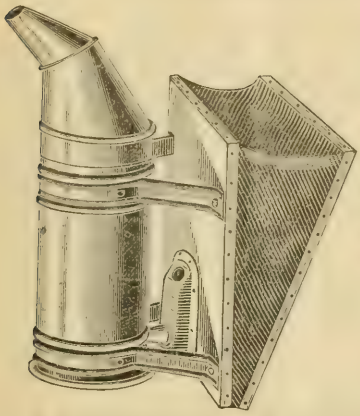
SOCIAL PURITY, ETC.

Dear Brother:—I am led to write this because of your Home talks in GLEANINGS of March 1st. Your subject was one that is near my heart; in fact, I often wonder if many young men suffer as much from sinning in this direction as I have. Among the first thoughts and aspirations that I can remember were those of lust. Without any training or teaching to the contrary, the habit grew with the years, until it proved my physical, moral, and intellectual destruction. The wages of sin is death—death in this world as well as in the next. Finally I got hold of some social-purity literature, which gave me an idea of what God intended I should be. Wasn't there a fight between Satan and God to see which should conquer? It would be impossible to describe the mental anguish I suffered for about three years. Resolution after resolution I broke, for Satan held me in chains of iron. I had a strong will power, but it availed me nothing against the tempter. I came to Christ for strength, and then I began to conquer my baser nature. I can do this thing "through Christ which strengtheneth me." This is a subject upon which children, as a general rule, get no instruction except that which they receive from evil companions. Had I known as much about the organs of generation as I now do, and my duty to God, how much physical and moral suffering I might have escaped! but as it is impossible to recall the past, I can only pray and work that I may be instrumental in aiding some of the young to escape what I have been through. What we need is some books on social purity that can be placed in the hands of every child. Parents are altogether too modest; children will and must learn such things, so why not from a pure source?

Your talks have done me more good than I can tell; but the strength we get from God is beyond estimating. It would not be any more wonderful to me to see a muddy stream changed into a sparkling, rejoicing rivulet than to know as I do the wonderful change God's grace has created and is creating in my soul or mind. M. N. E.

[May God be praised, dear brother, that you have been emancipated, through Christ, from Satan's toils. I agree with you exactly in regard to the importance of teaching our children, before the vicious and ungodly can do it for us. There is one branch of the work of the W. C. T. U. specially devoted to this subject; and my sister, Mrs. E. J. Gray, of this place, would be very glad to mail you tracts on social purity, and to give you advice in regard to the various books that have recently been put out to fill this very want. One of them, which I have recently gone through, I would especially recommend. Its title is, A Song of Life; or, The Cradle of the World; A. C. McClurg & Co., publishers, Chicago. The price, $1.00, seems a little high for the size of the book; but the work is really a gem, both in typography and illustrations. When I neared the end, a feeling of thankfulness to God came up every little while, that we had in our land a man or woman capable of handling this delicate matter so wisely and so well; and one who could leave such an impression on the reader of the importance of cultivating such a pure and high moral tone as the book holds up all the way through. The volume is exceedingly valuable, also, for its plain teachings in regard to science and physiology.]

NEW CRANE SMOKER NOW READY.



Smoking Capacity and Strength of Blast Simply Amazing.

The **New Non-Smoke-Sucking Check-Valve**, by which a great blast is secured and the bellows kept clean, and the **double lining of Asbestos and Sheet-steel**, by which the fire-cup and nozzle are kept from becoming uncomfortably hot during usage, are **DISTINCTIVE** and **VALUABLE** features alone possessed by the new implement. It would be impossible to tell of all its unique features, and so we say, try it and fall in love with it.

Price, with 3½-inch fire-cup and curved nozzle, by mail, $2.00; by express, $1.75.

If your nearest dealer in supplies does not keep it, write to the authorized manufacturer,

A. I. ROOT, Medina, Ohio.

N. B.—Don't forget that we are headquarters for all kinds of bee-keepers' supplies. Our new 1893 catalogue of 52 pages now ready for mailing.

Wants or Exchange Department.

Notices will be inserted under this head at one-half our usual rates. All advertisements intended for this department must not exceed five lines, and you must say you want your adv't in this department, or we will not be responsible for errors. You can have the notice as many lines as you please; but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices of offering articles for sale, can not be inserted under this head. For such our regular rates of 20 cts. a line will be charged, and they will be put with the regular advertisements. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange S. C. White and Brown Leghorn and Pekin duck eggs, for Italian queens, comb foundation, etc. 8-9-10d
J. E. PRYOR, Maple Grove, Madison Co., Iowa.

WANTED.—To exchange a good 6-in. Vandervort foundation-mill for cash or offers.
J. NEBEL & SON, High Hill, Mo.

WANTED.—A Safety bicycle. Any one having a Safety they wish to trade, please write to
F. H. MCFARLAND, St. Albans, Vermont.

WANTED.—Extracted honey in large or small lots. R. K. & J. C. FRISBEE,
8-9db 172 W. Maple St., Denver, Col.

WANTED.—To exchange 1600 bird eggs, British and American, also B. W. and T. English setter brood bitch, puppies by Gath's Hope, or grown dogs, all blue bloods, for a Barnes saw or offers.
JOHN A. BALMER, Vincennes, Ind.

WANTED.—To buy 100 strong colonies of bees in Michigan. Also to exchange a lot of two-story L. hives, with two sets each of worker combs, for bees, honey, or offers. Hives are near Prairie du Chien, Wis. B. WALKER, Evart, Osceola Co., Mich.

WANTED.—To exchange home-bred Carniolan queens, value $1.00 each, for hives, foundation, etc. MRS. FRANK BENTON, Charlton Heights, Md.

WANTED.—To exchange one 5x8 Favorite photograph outfit (new) for a Safety bicycle.
Address G. J. STURM, Mt. Erie, Ill.

WANTED.—To exchange high-grade bicycle for honey or wax. J. A. GREEN, Ottawa, Ill.
9-tfdb

WANTED.—100 swarms or nuclei, in May or June. Give price. AMERICAN HORTICULTURIST,
Hartford City, Ind.

WANTED.—To exchange 6 Heddon hives, full drawn combs, complete, for Brown Leghorn or Wyandotte fowls, eggs, or offers.
9-10d I. J. STRINGHAM, 105 Park Place, New York.

WANTED.—To exchange for beeswax, Gregg and Shafer raspberry roots. M. ISBELL,
9-10d Norwich, N. Y.

WANTED.—To exchange or sell 20 colonies Italian bees, lot of honey-boards, bee-hives, etc.; 1 pen Light Brahmas; trio C. Indian games, and trio S. S. Hamburgs. My stock is of the best. Will take in exchange good organ or best offers.
J. C. PROVINS, Masontown, Pa.

WANTED.—To exchange a stationary 30-horse Kokomo engine and 35-horse boiler, all in running order, for a 12 or 16 horse portable engine and thrashing outfit; must be in good running order. Address
H. L. VON LIENEN, Somerset, Saline Co., Ill.

WANTED.—To exchange a good hand seed-drill and a B-flat cornet, silver-plated, attachments, etc., for Italian bees or offers.
H. P. KETTERING, Greensburg, Pa.

WANTED.—100 or less colonies Italian or hybrid bees in good condition, on frames 9⅛ deep by 17⅞ or 13½ inches long, top-bar projecting ¾ inch.
FRANK MCNAY, Mauston, Wis.

HOW IS THIS?

Something unique, even in these days of mammoth premium offers. It is, the latest effort of Stafford's Magazine, a New York monthly of home and general reading.

The proposition is to send the Magazine one year for one dollar, the regular subscription price; and in addition to send each subscriber fifty-two complete novels during the twelve months; one each week.

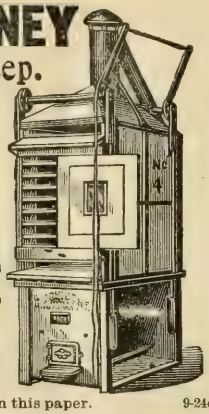
Think of it. You receive a new and complete novel, by mail, postpaid, every week for fifty-two weeks, and in addition you get the magazine once a month, all for one dollar. It is an offer which the publishers can afford to make only in the confident expectation of getting a hundred thousand new subscribers. Among the authors in the coming series are, Wilkie Collins, Walter Besant, Mrs. Oliphant, May Cecil Hay, Florence Marryat, Anthony Trollope, A. Conan Doyle, Miss Braddon, Captain Marryat, Miss Thackeray, and Jules Verne. If you wish to take advantage of this unusual opportunity, send one dollar for Stafford's Magazine, one year. Your first magazine and your first number of the fifty-two novels (one each week) which you are to receive during the year will be sent you by return mail. Remit by P. O. order, registered letter, or express. Address

H. STAFFORD, Publisher,
Stafford's Magazine,
P. O. Box 2264,
New York, N. Y.

Please mention this paper.

MAKE MONEY
While You Sleep.

STAHL'S EXCELSIOR FRUIT DRIER



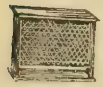
Evaporates Fruit **DAY and NIGHT.** Catalogue free upon application.
Address
WILLIAM STAHL EVAPORATOR COMP'Y, QUINCY, ILL.
Please mention this paper. 9-24db

"FLORIDA."—500
LEATHER-BACK ITALIAN QUEENS.
500 young queens ready for delivery April 20 to May 10. Price $10.00 per dozen. Special prices on three dozen or more. Purity and safe arrival guaranteed. The 300 tested queens are all spoken for.
A. F. BROWN, 7tfdb
Huntington, Putnam Co., Florida.

Tested Italian Queens.
Ready April 1, at $1.25 each. Untested, ready April 25; at 65c each; ½-doz., $3.50, or 1 doz., $6.50. Golden Italians from imported mothers; ready, untested, May 1, at 75c each; ½-doz., $4.25, or 1 doz., $8.00. Safe arrival guaranteed. 7-8-9-10d
Stewart Bros., Sparta, Tenn.

BEES QUEENS
SMOKERS, SECTIONS, COMB FOUNDATION
And all Apiarian Supplies cheap. Send for Catalogue.
E. T. Flanagan, Belleville, Ill.

PATENT WIRED COMB FOUNDATION
HAS NO SAG IN BROOD-FRAMES.
THIN FLAT - BOTTOM FOUNDATION
Has No Fish-bone in Surplus Honey.



Being the cleanest is usually worked the quickest of any Foundation made.
J. VAN DEUSEN & SONS,
Sole Manufacturers. 5tfd
Sprout Brook, Montgomery Co., N. Y.

VANDERVORT
COMB-FOUNDATION MILLS.
Send for samples and reduced price list.
1tfd **JNO. VANDERVORT, Laceyville, Pa.**

BEE-HIVES AND SUPPLIES.

Send for catalogue free. Address **SAMUEL JONES,** Highland Park College, Des Moines, Iowa. 1-19db

Bee-Hives.
Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue. 23-22db
W. H. PUTNAM, River Falls, Pierce Co., Wis.

THE WHITE PEARL CUCUMBER is a great acquisition as well as a novelty. For full particulars and seed send 25 cents to
6tfdb THOMAS GEDYE, Dayton, La Salle Co., Ill.

Try Duval's Golden 5-Banded Bees.
That have given such general satisfaction. They are the best honey-gatherers, gentle, and not surpassed for beauty. Queens ready now at $1.25; 6 for $6.00. For full particulars and prices send for circular. **C. D. DUVAL, SPENCERVILLE, MD.**
Please mention this paper. 7tfdb

DO YOU KNOW
That W. H. Bright is selling bee-hives and fixtures at a bargain? If not write for price list.
6-11db *W. H. BRIGHT, MAZEPPA, MINN.*

Eggs and Plants. Several varieties. Best quality. Any quantity. Finely illustrated catalogue free. Address
GEER BROS., St. Marys, Mo., or H. B. GEER, Nashville, Tenn.
Please mention this paper. 5tfdb

Golden Queens From Texas. My bees can not be surpassed for business, beauty, and gentleness. Safe arrival and satisfaction guaranteed. Untested queens—March, April, and May—$1 each. **50** fine Tested Queens for early orders, $1.50 each. Order early. Send for price list. 5-16db.
J. D. GIVENS, Box 3, Libson, Tex.

For new price list of *PURE ITALIAN BEES AND QUEENS, AND WHITE AND BROWN FERRETS, ADDRESS N. A. KNAPP, ROCHESTER, LORAIN CO., O.*

Please mention this paper. 4tfdb

Muth's
Honey-Extractor.
Square Glass Honey-Jars,
Tin Buckets, Bee-hives.
Honey-Sections, &c., &c.
Perfection Cold-Blast Smokers.
APPLY TO
CHAS. F. MUTH & SON, Cincinnati, O.
Send 10-ct. stamp for "Practical Hints to Bee-keepers."
Please mention this paper.

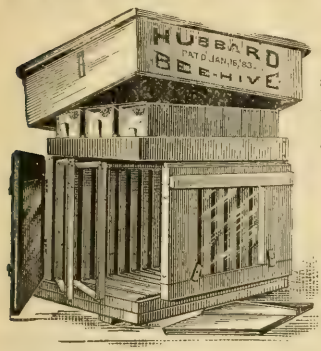
TAKE NOTICE!
BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH,
14tfdb New London, Wis.

Root's Goods AT ROOT'S PRICES can be had at Des Moines, Iowa. Address Jos. Nysewander.

HATCH CHICKENS BY STEAM
WITH THE IMPROVED
EXCELSIOR INCUBATOR.

Thousands in Successful Operation. *SIMPLE, PERFECT, and SELF-REGULATING.* **Guaranteed to hatch a larger percentage of fertile eggs, at less cost, than any other Incubator.** Send 6c. for Illus. Catalog. Circulars Free.
GEO. H. STAHL, Pat. & Sole Mfr., Quincy, Ill.
☞ Please mention GLEANINGS 22-9db

HUBBARD BEE HIVE AND SECTION PRESS.



If you want to handle bees **easy** by sitting down to it, here is the hive. Frames fixed and variable distance combined. No wrenching or prying or scraping of combs together. Many thousands in use, giving excellent satisfaction.

Live Agents make Splendid Profits.

Large Circular of 20 pages free.

This **SECTION PRESS** (Pat'd is sold at **$2.50** by the leading supply dealers. Ask them for it or send to me. A boy can put together 800 to 1000 sections an hour and have them **true.** Bend section around, put in press, give a little push—'tis done. Will last a life-time and is bound to please you.

Send for my Circular about Hive, Press, Foundation Fastener, Sections, Foundation, Italian Queens, Extractors, Veils, Honey Crates and Cases, &c. &c. It will interest you. Or send **15 cents** for Practical Book for Beginners—**"First Principles in Bee Culture."** 11th thousand just issued.

G. K. HUBBARD, 277 Harrison St., Fort Wayne, Ind.

In writing to advertisers please mention this paper. 8tfdb

Italian Queens

Tested, $1.25; 6 for $7.00; 12 for $13. Untested, 80 cts.; 6 for $4.50; 12 for $8.00. Extra select breeders, $2.00, or 3 for $5.00. *Safe arrival guaranteed.* Address all orders to

C. F. BECKEY, Manitou Beach,
Lenawee County, Mich.

Reference, Postmaster, Manitou Beach, Mich.

If you want **Italian Queens Now,** send to J. N. Colwick, Norse, Texas, who sends bees and queens on receipt of your cash order. Tested, reared '92, $1.25; 6, $7; 12, $13. Untested, $1; 6, $5; 12, $9. Two-frame nuclei, $1.25. Nuclei, $4. *Drones, Bees* and *Supplies* cheap. Safe arrival guaranteed. Send for circular.

Martin's Prolific Buckwheat

Still continues to **outyield Japanese, largely,** under same conditions, here in Michigan. $1.25 per bushel, or 75 cts. per ½ bushel, sacks included, on board cars here. Address

Wm. Martin, HIGHLAND, Oakland Co., Michigan. 8-11db

☞ In corresponding to this advertisement mention GLEANINGS

TELL you what, Jones, **Levering Bro.**, sell the best goods and at the lowest price of any one I've struck yet. The largest and best equipped

Bee-Hive Factory

in the West. The Dovetailed Hive and New Hoffman self-spacing frame a specialty. Every thing used by practical bee keepers at wholesale and retail. Send for their free Illustrated Price List, and save money. Supply Dealers, send for their Wholesale List. Address

LEVERING BROS.,
Wiota, Cass Co., Iowa.

3-14db

Please mention this paper.

GOLDEN ITALIANS.

My bees are large and great honey-gatherers. Untested queens, 80 cts.; 3 for $2.00. Warranted queens, $1.00; 3 for $2.50. Tested queens, $2.00. Select tested, $2.50. Satisfaction guaranteed, or money refunded. **C. M. HICKS, Hicksville, Wash Co., Md.**

Please mention this paper. 8-10-12d

Bees For Sale Cheap.

My bees having wintered in fine condition, as my old reliable strain of Italians always do, to reduce my stock I will sell 50 colonies at a low price.

Send for 44 page descriptive price list of Bees, Queens, and Supplies. The very best goods at the lowest possible price. 7-tfdb

WM. W. CARY, Colrain, Mass.

Please mention this paper.

Deduct 3 Cts. per Pound

From our retail prices of foundation, given in our 1893 price list.

M. H. HUNT, - Bell Branch, - Mich.

For Sale at a Bargain.

The entire stock of bees and paraphernalia, all of superior quality and of the most modern and approved kind, of the late Albert Edwards. Enquire of Mrs. Albert Edwards, Box 18, Skaneateles, N. Y.

COOK, NOTTINGHAM & PIERCE.

DON'T MONKEY

with cross bees. Our Golden Queens, untested, in May, $1; 3 for $2.50. Tested, $1.50; 3 for $4. Nuclei and full colonies at low figures. Send for price list, supplies, etc.

John Nebel & Son, High Hill, Mo.

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CONVENTION NOTICES.

There will be a meeting of the Southeastern Kansas Bee-keepers' Association, June 17, at the apiaries of C. C. Thompson, one mile west of Bronson, Bourbon Co., Kansas. No hotel bills to pay. Everybody invited. J. C. BALCH, Sec.

California Bee-Keepers!

Can obtain ROOT'S GOODS, also California-made Supplies, from
WM. STYAN, SAN MATEO, CAL.

BIG DISCOUNT on Foundation and Sections. Thin foundation, 50 cts. per lb.; brood, 40 cts. No. 1 sections, $2.75 per M. Every thing cheap, price list free. E. H. TRUMPER, Bankers, Mich.

WANTED.—To exchange for wax or offers, shallow extracting-combs, 40c per set, including supers for 8-f. L. hives. Wood-zinc honey-boards, 12c. H. D. BURRELL, Bangor, Van Buren Co., Mich.

The Coming Game Bird.
The Chinese Pheasant,
or Mongolian Ring Neck.
Send for descriptive catalogue to
JAS. A. SIMPSON, Alexis, Ill.

800 L. COMBS.
Large extractor, 10-in. fdn. mill, for sale; also my farm of 120 acres good land; good buildings and sawmill on it, with water power. A fine property.
JAS. NIPE, SPRING PRAIRIE, WIS.

5-Banded Golden Italians.
Three or five banded queens, each, $1.00; 6 for $5.00. Nuclei and full colonies cheap. Pure B. P. Rock and B. Leghorn eggs, $1.00 per 13. Catalogue free.
9-tfdb *Chas. H. Thies, Steeleville, Ill.*

Friends,
I am now ready with those nice Italian queens, which I will sell at $1.00 for untested; tested, $1.50. Bees by the lb., $1.00; 1-frame nucleus, $1.25; 2-frame, $2.25.
Mrs. A. A. Simpson, Swarts, Pa.

Good News.

For years I have not been able to dress myself; and for many weeks have had to be lifted out in my bed and chair. Under the pressure of necessity I have invented a device by which a child can put me to bed or take me up. The device can be used in any room or part of a room. A practical, simple, cheap device. Invalids will do well to correspond. I can help you. You can help me. Address
A. BEESON, Loveland, Col.

500 HIGH-GRADE BICYCLES for sale, cushion and pneumatic tires. Big discount to agents. Send for catalog. ROBERT B. GEDYE, La Salle, Illinois.

Onion-Plants for Sale.
Prizetaker and White Victoria at 15 c per 100, or $1.00 per 1000. *P. O. Thompson, Sidney, O.*

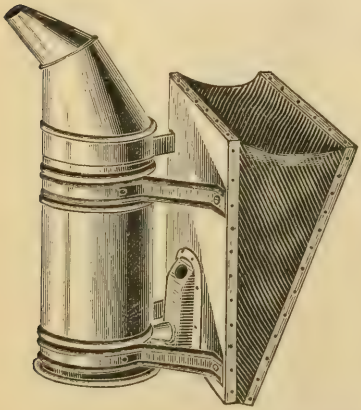
WANTED.—To exchange Odell double-case typewriter, almost new; cost $20.00, for bees.
WM. ANDERSON, Imlay City, Mich.

TILE ✠ DRAINAGE.

BY W. I. CHAMBERLAIN, A. M., LL. D.,
Formerly Secretary of the Ohio State Board of Agriculture, and late President of the Iowa State Agricultural College. At present Associate Editor of the Ohio Farmer.

This is a valuable companion to our other rural books. It embraces the experience of forty years of one of our foremost practical agriculturists, who has laid with his own hands over 15 miles of tile.
Price 35c; by mail, 40c.
A. I. ROOT, MEDINA, OHIO.

NEW CRANE SMOKER NOW READY.



Smoking Capacity and Strength of Blast Simply Amazing.

The **New Non-Smoke-Sucking Check-Valve,** by which a great blast is secured and the bellows kept clean, and the **double lining of Asbestos and Sheet-steel,** by which the fire-cup and nozzle are kept from becoming uncomfortably hot during usage, are **DISTINCTIVE** and **VALUABLE** features alone possessed by the new implement. It would be impossible to tell of all its unique features, and so we say, try it and fall in love with it.

Price, with 3½-inch fire-cup and curved nozzle, by mail, $2.00; by express, $1.75.

If your nearest dealer in supplies does not keep it, write to the authorized manufacturer,
A. I. ROOT, Medina, Ohio.

N. B.—Don't forget that we are headquarters for all kinds of bee-keepers' supplies. Our new 1893 catalogue of 52 pages now ready for mailing.

HONEY COLUMN.

CITY MARKETS.

CINCINNATI.—*Honey.*—A short supply of extracted honey is the cause of a slow demand from the manufacturers. It forbids an effort on our part to sell. Demand is fair for family use. It brings 6@8 on arrival. There is no choice comb honey on our market, and prices are nominal at 12@16 in the jobbing way. *Beeswax*, in fair demand, at 22@25 for good to choice yellow.

CHAS. F. MUTH & SON,
May 8. Cincinnati, O.

CLEVELAND.—*Honey.*—Our market is rather quiet, as demand is light. It is quite scarce, and would net about 16c for nice white 1-lb. sections. *Beeswax*, steady at 30c.

WILLIAMS BROS.,
May 8. 80 & 82 Broadway, Cleveland, O.

MINNEAPOLIS.—*Honey.*—Honey is in good demand, especially for fancy white-clover honey. There is considerable of a low grade on the market. Strained honey is also moving more freely. Fancy white-clover, 1-lb. sections, 18c; choice white clover, 16c; goldenrod, 1-lb., 13@14; dark honey, 12@13. *Beeswax*, in light demand.

May 8. J. A. SHEA & CO.,
116 First Avenue North, Minneapolis, Minn.

MILWAUKEE.—*Honey.*—The market for honey is good for choice sections and the supply is small; in fact, the stock of comb honey is very nearly all cleaned up. Can quote: choice white 1-lb. sections, 20@22; good, 15@18; common, 10@13. Extracted, white, 10@11; dark, nominal, 7@8. *Beeswax*, 23@26.

May 11. A. V. BISHOP,
Milwaukee, Wis.

ALBANY.—*Honey.*—Small lots of comb honey continue to arrive, and sell readily at 10@11 for buckwheat, and 13@15 for clover. Extracted very dull at 7@8 for dark, and 8@9 for light.

May 8. CHAS. MCCULLOCH & CO.,
393, 395, and 397 Broadway, Albany, N. Y.

KANSAS CITY.—*Honey.*—The old crop of comb honey will soon be cleaned up. We quote: White, 1-lb. comb, 15@16; amber, 1-lb. comb, 12@15; extracted, 6@7½. *Beeswax*, 22@25.

CLEMONS-MASON COM. CO.,
May 8. Kansas City, Mo.

ST. LOUIS.—*Honey.*—Market quiet, with fair demand. New Southern crop arriving freely. We quote: White-clover comb, 17@18; medium, 15@17; dark, 10@12. Extracted, barrels, 5½@6½; cans, 6½@7½. *Beeswax*, prime yellow, 25½.

D. G. TUTT GRO. CO.,
May 8. St. Louis, Mo.

KANSAS CITY.—*Honey.*—Market all cleaned up on old honey. None on hand until new crop comes in.

HAMBLIN & BEARSS,
May 8. 514 Walnut St., Kansas City, Mo

DETROIT.—*Honey.*—The market is bare of good comb honey, and the new crop will find ready customers, for a time at least. Extracted, 7@8. *Beeswax*, 25@26.

M. H. HUNT,
May 8. Bell Branch, Mich.

CHICAGO.—*Honey.*—Market unchanged on extracted honey and basswood. Comb honey more difficult to sell as the warm weather comes.

R. A. BURNETT CO.,
May 8. 161 So. Water St., Chicago, Ill.

BOSTON.—*Honey.*—Honey is selling slowly. No change in prices. Maple sugar and syrup interfere with the sale of honey very largely.

BLAKE & RIPLEY,
May 8. Boston, Mass.

ST. LOUIS.—*Honey.*—The honey season is about over. There will not be much more demand for honey before the last of August, although there is a limited demand all the time. Choice white clover comb, 16@17c; off grades from 9@15, as to quality of goods. Extracted honey, in barrels, 5@6c; in cans, 6@9, as to quality. *Beeswax*, firm, 25@25½; selected yellow, 28@30c.

W. B. WESTCOTT & CO.,
May 8. St. Louis, Mo.

BUFFALO.—*Honey.*—The stock of honey in market is very light with the few odds and ends—lots that we are cleaning up very low. A liberal amount of fancy honey could be placed here at excellent prices, 17@18; choice, 14@15; common, 8@12.

BATTERSON & CO.,
May 8. Buffalo, N. Y.

I have a quantity of catclaw and guajilla honey, mixed, which I offer at 6 and 6½. A. A. HARRIS,
Batesville, Tex.

BUFFALO, N. Y. Unsurpassed Honey Market.
BATTERSON & CO. Responsible, Reliable,
Commission Merchants. 18tfdb **and Prompt.**

Muth's Honey

In packages of ¼, ½, 1, and 5 lbs.,
25c. per lb.
If sent by mail, add 17c for every lb.

C. F. Muth & Son,
976-978 Centr. Ave.,
CINCINNATI, OHIO.

Caramels.

BUGGIES at ½ Price
CARTS & HARNESS
$90 Top Buggy..$37
$95 Phaeton.....$54
4 Pass. Top Surrey.$47
$50 Road Wagon $25
$16 Road Cart..$8.25
Buggy Harness$3.85
$10 Buggy " $4.75
$30 Team " $12.50
Morgan Saddle$1.65
We Cut the PRICES and outsell ALL competitors. Buy of factory and save Middleman's profit. Catalogue Free.
U. S. BUGGY & CART CO.
55 S. Lawrence St., Cincinnati, O.
7-12db Please mention GLEANINGS.

GOLDEN CARNIOLANS
Absolutely a Faultless Strain of Bees.
One queen $1 00
Three " 2 75
Six " 5 50
Twelve " 10 00
Leather-colored Italians same prices as Golden Carniolans. Satisfaction guaranteed.
HENRY ALLEY, Wenham, Mass.

WANTED—Every reader of GLEANINGS to send for one of my
LADIES' TOILET-CASES.
Well worth $1.00 in any family. Will send sample by mail for 50 cts. in stamps, returnable if not satisfactory. Address *J. C. Frisbee, General Agent, 172 Maple St., Denver, Col.*
Reference, A. I. Root, Medina, O. 10tfdb
Please mention this paper.

ITALIAN QUEENS
Reared in full colonies from the best of stock. We aim to give satisfaction by sending out nothing but choice queens. Tested, $1.00; $10.00 per dozen. Untested, 75 cts.; $8.00 per dozen. *Imported Stock.*
J. W. K. SHAW & CO.,
Loreauville, - Iberia Par., - La.

CAUTION!
Bee-keepers are cautioned against purchasing drone-traps of one Weaver, of Missouri. He has no authority from me to sell them.
H. ALLEY, Wenham, Mass.

What Stood the Test?

Hilton's Improved Chaff Hives have for the past 15 years. Send for his free illustrated catalogue of every thing needed in the apiary, of

Best Quality and Lowest Prices.

One hundred colonies of Bees for sale. Write for prices, and address

GEO. E. HILTON, Fremont, Mich.

8-13db Please mention this paper

Our new patent nozzle-handle and bent smoke discharge to each of the *first fifty applying* bee-keepers who have either of our three-large sized smokers, to put them on. State where you saw notice, size of smoker, etc. All we ask in return is a private letter within ten days after receipt of improvements, stating whether you like or dislike either the handle or curve, and if any change in them would overcome the defect you point out. After the fifty names are registered and supplied our new circular will be sent instead of handle, etc.

BINGHAM PERFECT

BEE SMOKER

Pat'd 1878, 1882, & 1892.

Cheapest & Best on Earth.

Send Card for Circular to

Bingham & Hetherington

ABRONIA, MICH.

8tfdb Please mention this paper.

PURE ITALIAN BEES.

By the pound, 90 cents. Untested queens from imported mother, 90 cts. Two-frame nuclei, both frames containing brood with all adhering bees, and untested queen from imported mother, $2.00. Tested queens, $1.50. Satisfaction guaranteed. I will be ready to ship by May 25th.

MRS. A. F. PROPER, PORTLAND, JAY CO., IND.

WANTED.—Agents to show up and sell the Pratt self-hiver; complete sample postpaid by mail for 75c; circular free. Address

E. L. PRATT, Beverly, Mass.

"Do it now." A success. 7tfdb

A NEW BOOK ON

Tomato Culture, Plant Growing,

AND

High Pressure Gardening in General.

Price 35c; By Mail, 40c.

To get your tomatoes started, more or less gardening under glass must be done, as you are probably well aware. Well, when you can manage the tomato under glass, you are ready to manage almost any other vegetable crop; therefore we regard the tomato book as one of the most valuable if not *the* most valuable of any work on raising plants and vegetables that require protection from the frost; and whether the protection is to be in the fall of the year, or the middle of the winter, or in the spring months, you will find the tomato book full of the latest and most modern appliances for giving protection at the smallest expense. Of course, a part of it has already appeared in GLEANINGS; but probably considerably more than half will be found new to our readers.

A. I. ROOT, Medina, O.

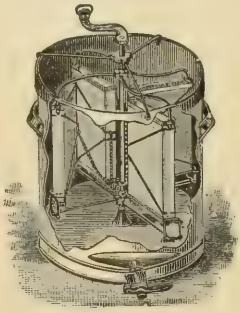
"You Push the Slide; Nature Does the Rest."

The first *perfect* and *practical non-swarming* plan that has ever been brought to completion is *found at last.* Nothing like it ever done. I worked the plan on *100 colonies* last year (1892), and I do not make any statements at random in my circular, as each point has been fully tested. Tells you all about it. No hunting or caging queens, cutting cells, moving hives, or even opening the brood-chambers at all during the honey season, etc., etc., *and more honey with no swarming.* Get into line and "keep up with the procession," or you'll get left. The device will be put on the market within the reach of all; or, if your dealer does not supply them yet, they may be ordered of me by express or freight at the following prices, complete: 75 cts. each; $5.00 per 10; $40.00 per 100. By mail, 35 cts. extra. As one device *works two hives,* at ten rates the cost is only 25 cts. per hive. Be sure to send for circular, as this plan is almost too good to believe its being true.

H. P. LANGDON, East Constable, N. Y.

Stanley Automatic Reversing

HONEY-EXTRACTOR.



We still have in stock eight or nine 2 and 4 frame Stanley extractors, bought of Mr. Newcomb when we leased the right to make these machines. To work them off quickly, and give us a chance to put out machines of our own make, we offer these machines as long as they last, at one-third off old prices. We will sell the two-frame machines as they are for $8.00; the 4-frame for $12.00. They are crated ready for shipment, with crank direct on the center-shaft. We will attach our new bevel gear, as shown on page 14 of our catalogue, for $3.00 each extra.

A. I. ROOT, Medina, Ohio.

75 *Colonies Italian and hybrid bees* in 8 or 10 frame Dovetailed or Simplicity hives, combs built on wired fdn. Every thing in first-class shape. Bees extra strong. Italians, $4.00; hybrids, $3.50 Hives and frames are Root's make. Safe arrival guaranteed. *L. H. ROBEY,*

9-10db *Worthington, W. Va.*

WANTED—Your address on a postal card, to receive the *Am. Apiculturist*

9-tfdb *FREE THREE MONTHS.*

Address *H. ALLEY, Wenham, Mass.*

responding to this advertisement mention GLEANINGS.

Central Bee-Hive Factory

And Bee-keepers' Supply-house of Illinois. Write for Catalogue for 1893. Address

F. N. JOHNSON, P. O. Box 137,

8-13bd Knoxville, Knox Co., Illinois.

A large number of fine queens on hand; yellow and prolific; ready April 15th; warranted queens, $1; 6 for $4.50; select tested, yellow to the tips, suitable for breeders, each, $2. Reference, A. I. Root. 3tfdb

W. H. LAWS, Lavaca, Seb. Co., Ark.

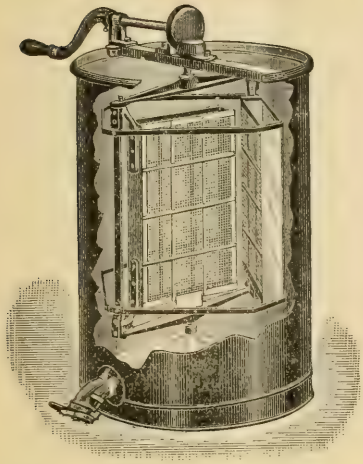
Pure Barred Plymouth Rock Eggs

for setting, 15 for $1. Mrs. A. A. SIMPSON,

8-9-10d Swarts, Pa.

SELLING OUT! Chaff Hives, etc., very cheap. F. H. & E. H. DEWEY, 55 Mechanic St., Westfield, Mass. 8-12db

A Grand Success.



New Cowan Reversible Honey-Extractor.

May be Reversed without Stopping the Machine.

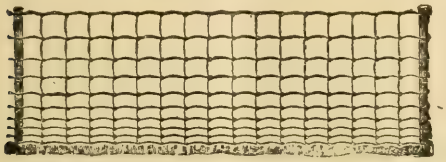
Strong, well made in every respect, light, and of convenient size. The can is but little larger than that of the Novice. The gear is beveled, and covered by an iron shield, and the crank outside the can. Frank McNay, of Mauston, Wis., a bee-keeper who produces tons and tons of extracted honey, says of it:

After carefully examining and trying the Cowan extractor, I have failed to find a weak part, and I do not hesitate to say that it is the best extractor made, both in regard to convenience and durability, and I shall replace all of my five machines with the Cowan as soon as possible.

It is indorsed also by J. F. McIntyre, an extensive extracted-honey producer in California; by W. Z. Hutchinson, Dr. C. C. Miller, Dr. A. B. Mason, and others.

Price all Complete, Japanned and Lettered, for L. Frame, $10.

A. I. ROOT, MEDINA, OHIO.



Give and Take

Is the motto of the Coiled Spring Fence. It gives to contraction what it takes from expansion. It gives unruly stock as good as it gets. It gives barb wire notice to quit, and takes the lead of the opposition. It gives odds to all competitors and takes sweepstakes every time. 7-6db

PAGE WOVEN-WIRE FENCE CO., Adrian, Mich.

☞In responding to this advertisement mention GLEANINGS.

READY AGAIN!

My location enables me to rear those nice Golden Queens, by Doolittle's method, as cheaply now as at any time in the North. Untested, 75c; 6 for $4.00; 12, $7.50. Last year's tested, $1.25; select, $1.75; breeder, $2.50. Safe arrival and satisfaction guaranteed.

J. B. CASE, Port Orange, Vol. Co., Fla. 5tfdb

I have one of the choicest flocks of

BROWN LEGHORNS IN THE STATE.

Keep no other kind. Eggs, 75c per 15; $1.25 per 30.

8tfdb B. G. SCOTHAN, Rogersville, Mich.

The Golden Beauties.

My 5-banded Italian queens can not be surpassed for honey-gathering, gentleness, prolificness, and beauty. Untested, 75c each; tested, $1.00; breeding queens, $2.50 to $3.00. We warrant our queens purely mated. On orders for 5 or over, 10 per cent discount. Safe arrival and satisfaction guaranteed.

Address **C. B. Bankston, Chrisman, Tex.** 8tfdb

50 Colonies of Italian Bees

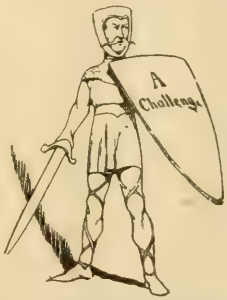
in ten-frame Langstroth, and eight-frame A. I. Root's Dovetailed hives, bees in tip-top condition. Safe arrival guaranteed. JOHN GRANT,

8-11db Batavia, Clermont Co., Ohio.

IMPORTED 1892 *Carniolans* on hand, *Italians* arriving soon, $5 each; *Cyprians, Syrians, Palestines,* $7. Home-bred, $1. Postpaid to any office in the world.

MRS. FRANK BENTON,
Charlton Heights, Md.

I Challenge



Any one to produce better queens than my **Five-banded Golden Italians.** A good many offer **lower-priced** queens; but, as there is a class of intelligent bee-keepers who want the **best,** I prefer to supply them than to rear queens by the "go-as-you-please" plan, that could be sold cheaper. My aim is to rear the **very best,** regardless of cost.

Just imagine handling bees at any time, regardless of weather or robbers, and using **no smoke,** and never getting stung. That is the way I handle the colony of my best breeding queen; but you ought to see them roll in the honey!

Send for my price list with the **strongest lot of** *testimonials* you ever saw.

One queen, warranted purely mated, May, $1.25; later, $1.00.

Entire Satisfaction Guaranteed.

Reference, A. I. Root. Money-order office, Cable, Ill.

S. F. TREGO,

Swedona, = = = Ill.

Formerly S. F. & I. TREGO. 7-18db

Root's Goods for the West.

Address Jos. Nysewander, Des Moines, Ia.

EARLY QUEENS.

All Italians. *3 and 5 Banded.*	May	June and after
1 untested queen	$1 00	75
6 untested queens	5 00	4 00
1 tested queen	1 50	1 50
3 tested queens	4 00	4 00
Select tested	2 50	2 50

Two-frame nuclei with any queen, $1.50 each extra. Safe arrival guaranteed. 9-12db

W. J. ELLISON, Catchall, Sumter Co., S. C.

Bees for Sale.

As mentioned in the last REVIEW, my bees have wintered well. They are now on their summer stands, most of them being packed in sawdust. They will be fed if necessary, and every attention given necessary to keep them in the best possible condition. I have more bees than I can manage in connection with the REVIEW, and I should be glad to sell part of them. They are in the New Heddon hive, but purchasers not having the right to use this hive will be furnished free with a permit from Mr. Heddon. I will sell one colony for $6.00; 5 for $28.50; 10 or more at $5.50 each. With each colony will be sent a bottom-board, cover, and one section case. The bees are all pure Italians, and the queens of last year's rearing. Shipments will be made immediately at the close of fruit bloom when the weather will be neither too cold nor too hot, and there will be a supply of freshly gathered honey from which the bees can supply themselves with water while on their journey.

W. Z. HUTCHINSON, Flint, Michigan.

Free! 200-Page Bee-Book!

TO EVERY NEW YEARLY SUBSCRIBER TO

The Weekly American Bee Journal

32 pages, $1.00 a year. Send for FREE Sample Copy with full description of Book.

Address, **GEORGE W. YORK & CO., 56 Fifth Ave., CHICAGO, ILL.**

TO NEW SUBSCRIBERS: THE JOURNAL ALONE SENT FOR 3 MONTHS FOR 20 CENTS.

Great Reduction.

Sections at greatly reduced prices. Hives, Shipping - cases, etc., at Bed-Rock Prices. Write for free Illustrated Catalogue and Price List.

G. B. Lewis Co.,
Watertown, = = = Wis.

1tfdb Please mention this paper

Notice

What JENNIE ATCHLEY Says

about my new ***Drone-Trap*** and queen-cages:

April 22, 1893.

A. A. Weaver, Warrensburg, Mo.

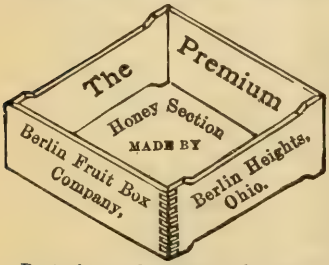
Dear Sir:—Your drone-trap at hand, and we had an excellent opportunity to test it to-day. The drones were flying by the hundreds. We attached the trap to a hive, and in a few minutes had the satisfaction of seeing it chuck full of drones. Yes, it caught the very last drone that attempted to leave the hive. Now, that drone-catcher of yours is the best thing of the kind I ever saw, and ought to be in the hands of every bee-keeper. Your queen-cages prove to be the best I have ever used, and for workmanship can not be excelled.

Very truly yours, JENNIE ATCHLEY.

Sample drone-trap, by mail, 60c; sample queen-cage, 5c. Send for prices on quantities; also price list of bee-keepers' supplies and Italian queens.

9-tfdb ***A. A. WEAVER, WARRENSBURG, MO.***

Great Reduction in Prices.



We now sell our premium No. 1 one-piece sections at $2.50 per M; No. 2 at $1.50. *A liberal discount* will be made on larger orders. Dealers would do well to get our figures on sections and wood separators before buying elsewhere.

Berry boxes, baskets, and crates of the most approved styles at the lowest rates. Send for catalogue with *reduced prices*. Address as in cut above. Mention this paper. 8-12db

POLISHED

One-Piece Sections Our Specialty.

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GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
PUBLISHED BY A. I. ROOT
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Vol. XXI. MAY 15, 1893. No. 10.

STRAY STRAWS

FROM DR. C. C. MILLER.

ARE YOU PLANNING to come to Chicago next October?

TALLY ONE more in the line of improvements. That $3.00 rig on p. 349, to allow common people to use steam without owning a steam-mill.

AMONG PICTURES of prominent bee-men in *Schweizer Bienenfreund* is one of A. J. Root, looking wonderfully like our old friend A. I.

DANDELION-BLOSSOMS were half open April 17, and the same blossoms are half open May 5. Guess they wish they hadn't started so soon.

THE BEST MUCILAGE to fasten labels on glass, according to *Schweizer Bienenfreund*, is the white of egg beaten to a froth and then allowed to settle.

I'VE BEEN READING the new edition of Simmins' Modern Bee-farm, and it seems like a live bee-keeper in his shirt-sleeves telling how he does.

IF NOT SURE whether to say "apartment" or "department," better say "apartment," for nine times out of ten that's the one meant in bee-keeping.

NUCLEI is the right word to use if you mean more than one nucleus; but "nuclei" is never an adjective, so don't say "nuclei hives," but "nucleus hives."

THERE'S A LESSON for those who want to tinker with weak colonies, on p. 341, where Harbison doubled down 62 colonies to 50 when 12 colonies meant $1200.

FRIEND POUDER, on p. 351, is after nearly the same cover I've been studying on—a closed box ⅞ in. deep, of ½-in. stuff, as nearly air-tight as possible, covered with tin.

STIMULANTS are among the things I don't use at all—don't believe in 'em. But there's something very stimulating in that talk on p. 360. Good for you, Bro. Root.

COWAN INSISTS that there is no white wax made by bees; but that if we take that which looks white and lay it on white paper the yellow tint will be plainly seen.

IF YOU MOVE a hive from its stand temporarily to manipulate it, put an empty hive in its place for the flying bees to fool around in, instead of going into other hives to be killed.

CALIFORNIA AND FLORIDA produced more honey in 1892 than there ever was consumed in America during any one year up to about ten or fifteen years ago.—C. F. Muth, in *A. B. J.*

CLIP THE WING of a newly bought queen, at least enough to mark her; then if she disappears and another takes her place by any means, you'll not blame the queen-dealer for cheating you.

THE DZIERZON THEORY should be thoroughly understood by every one who desires to be an intelligent bee-keeper. I'm led to say this from seeing the theory ridiculed by one signing M. D. to his name.

THE FRENCH *Revue* occupies a page in telling how John Hammond, Dadant's colored man, found his mother after 38 years' separation. It gives a hint as to the esteem in which Dadant is held in France. And John deserves it.

"IT IS, SO FAR, doubtful whether honey-producing alone, except under particularly favorable conditions, will ever become a reliable source of income."—A Modern Bee-farm. There's honesty for you, anyway.

TIN JOINTS for making a hive-cover of two pieces water-tight are a delusion. I have a number of them; and as they grow older they grow badder. For a hive-cover 14 inches wide, give me a single board every time.

I BELIEVE in patents, but there's one trouble about them. A patent on an article doesn't leave you quite so free to discuss the merits of the article. Any unfavorable criticism is likely to be considered a personal attack on the patentee.

THAT "85" with a string of ciphers after it at the bottom of p. 363 makes one open his eyes; but it also awakens a feeling of gratitude that nowadays human lives are considered too valuable to use up so many of them in a thing of that kind.

THE CHIEF HINDRANCE to the development of apiculture in France, says a writer in *Bulletin*, is the price of movable-comb hives. While a box hive costs 40 or 50 cents, a movable-comb hive costs $4.00 or more. Better send over a cargo of Dovetails, Bro. Root.

SMOKER FUEL. L. Highbarger sent me some cotton waste, such as they use in axle-boxes of railroad cars. I think it had already been used in axle-boxes. It makes a dense smoke, holds fire well, and lasts well. It may be a little bad about creosote, but on the whole it is, I think, quite an acquisition.

I HOPE those who have A. I. Root in charge will not turn him loose at the World's Fair till he changes his belief that "such acts of highway robbery are mostly confined to individuals who have thoughtlessly exhibited money," etc. (p. 359). He might stray into some of the streets where the thugs and thieves are not so discriminating.

THAT "GETATABLE" business on p. 362 is good; but if you're hitting at me it would be better to tell me privately. But I do try. I'll tell you how I do generally. Before sending any thing off, I try it on my folks. If they hesitate about understanding, I don't explain, but change it till they do understand.

WHY DON'T YOU make a bag-holder, friend Root, instead of wearing out that little girl's elbow (p. 359)? If you can't do any better, put two hooks in the wall to hold the bag in two places, then one hand will do the rest. But to make a bag-holder of a little girl! The idea! Next you'll be making a man get down on all fours to use him for a step-ladder.

"THIS SPRING isn't so very bad, and it isn't so very good. Up to April 20 we've had few days for bees to fly." That's what I said last number. Since that spring has just humped itself to show that it was no milk-and-water affair. April 20 started in for a two-days' snowstorm, and then it continued cold, wet, and windy. May 3 was the first day for bees to fly, and I'm almost afraid to count up how many colonies I have left.

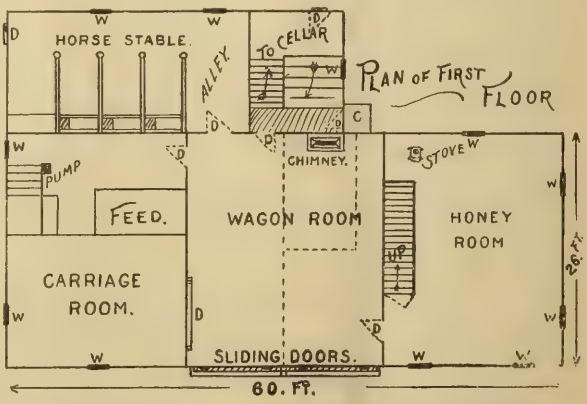
ELWOOD'S MAMMOTH BEE-CELLAR.

A REPOSITORY WHERE 1300 COLONIES ARE WINTERED SUCCESSFULLY; NECESSARY REQUISITES FOR WINTERING; ARTIFICIAL HEAT AND VENTILATION.

When the editor of GLEANINGS visited us two years ago he requested that a photograph be taken of our premises after the bees were gathered in from the out-apiaries. The accompanying view, which has been waiting "copy" for more than a year, is a reproduction of this photograph. The artist endeavored to get a front instead of a side view, but the lay of the land prevented. Nearly half of the whole number of hives are not shown. By going upon a hill a short distance away, the whole might have been included; but the hives would have appeared too small and indistinct. The permanent home yard does not appear in the picture, being located in the back part of the orchard, the fore part of which is seen in the left side of the picture, and is about fifteen rods from the buildings. It was put there to get the protection of a natural windbreak, and is as near the house and barn as I care to have it. The outyards also, to prevent annoyance, are all located some distance away from buildings. The home yard is managed the same as the other yards, and is looked over but once in a week or ten days. The cart shown in the picture is used in working this yard. Supplies for the out apiaries are carried in a wagon which is driven up as close to the bees as possible, and left there during the day. As will be noticed, the rows of hives are irregular, which is an assistance to the bees in locating their own hives. For the same reason, it is preferred that, in spring and fall, the hives tip in conformity to the ground unless such irregularity cause the hives and comb to lean much sidewise. It is not well to allow combs to bulge, as such never become perfectly true again.

The large building is a combined barn, wagon-house, and honey-house, with a bee-cellar under the whole, except under the part occupied by the horse-stable.

The second story has a stove-room over the honey-room, a shop over the wagon-room, hay-mow over the carriage and feed rooms, and a straw-mow over the horse-stable. The cellar is divided in the middle by a partition that can be closed when putting in or taking out bees, and has an ante-room, as indicated by the dotted lines in the wagon-room. There is a well in one corner, with a pump up in the feed room. It would be an improvement to put in an elevator at the foot of the honey-room stairs, running to the second story, and by means of a trap-door down into the cellar. The bees are now taken in and out of the cellar from the back (or west) door, down three steps. A heavy bank of earth nearly up to the sills protects the back side of the cellar. The front side is in a bank. There is a good drain from the cellar, and in addition there is a line of tile a foot in diameter extending out about a hundred feet, where there is an opening. From this point, for another hundred feet, the size is 8 inches. This is a fresh-air tube, and is always open. In a very wet time it also acts as a drain; and once during a spring freshet it paid for itself several times over by a few hours' drainage. A large chimney, with three flues, runs from the cellar up. The middle flue is for smoke; the outside ones, one foot by one and a quarter feet each, are for ventilation. There is always a good draft up, but it can be materially improved in muggy weather by building a fire in the shop stove. There are double outside cellar-doors. The inner one is largely of wire cloth, for ventilation when the outside door is open. There are also openings in the floor over the cellar, for ventilation. At no time during the severe winter just past have the ventilators been wholly closed. One night, with the temperature at zero, the ventilators were too far closed, and the next morning the temperature of the cellar had risen to a dangerous point. Formerly a stove in the ante-room kept the temperature up to 45 degrees; but now the increased number of bees makes a stove unnecessary for this purpose. The amount of moisture in the air is as important as the temperature. The best results were obtained when a fire was built in the ante-room stove regardless of temperature, whenever the hygrometer showed the air nearly approaching the point of saturation. The same results are now sought for by increasing the ventilation; but occasionally the plan fails; for when the air is saturated, and above freezing outside, it does not become dry enough when it reaches the slightly higher temperature of the cellar. The cellar will hold comfortably



PLAN OF ELWOOD'S HONEY-HOUSE AND BARN (FIRST FLOOR).

APIARY AND RESIDENCE OF P. H. ELWOOD, STARKVILLE, N. Y.

Hives ten feet apart in row. Rows ten feet apart. One hive facing south, next hive east, making same entrance twenty feet apart. Rows irregular on purpose so as to aid bees in making home.

1000 or 1100 colonies. Thirteen hundred were put in last fall; but the cellar was overstocked, and some had to be taken out the last of March to relieve it. The last have just been taken out, and we find them in fair condition. They wintered quite well up to March, when they began to waste rapidly, owing to warm weather outside. There were no dead ones in the first three hundred set out, and only nineteen in all. Half of this loss was from causes unknown; the other half was caused by poor queens and lack of stores, occasioned by somebody's blunder in looking over, weighing, or feeding. The poorest wintering was a lot of hanging-comb hives set in for transferring. The bees from two of our out-apiaries did not winter quite as well as the remainder. The out-yard bees do not winter as well as our home yard. This is attributed to the disturbance of moving them home, and to a certain amount of mixing up and loss of bees that seems unavoidable. Our best bees came from those parts of the cellar having the freest ventilation.

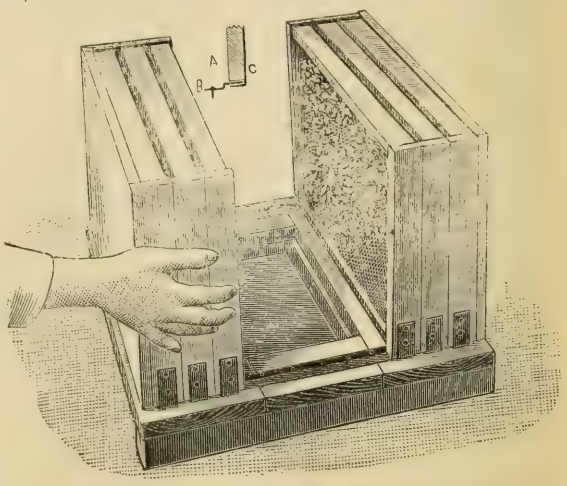
I do not care to discuss the subject of ventilation, as I have already done so (page 222 of the *American Bee Journal*, 1878); but after our experience it is somewhat exasperating to be told that bees need no ventilation while in winter quarters. This statement, in entire disregard of well-established scientific principles, and of all practical experience bearing on the subject, is on a par with the assertion that bees can make honey from commercial sugar. P. H. ELWOOD.

Starkville, N. Y., April 22.

[When we visited Mr. Elwood, two years ago, we took more than an ordinary interest in that mammoth bee-cellar, especially when we learned that he could winter over a thousand colonies in it successfully; and it was one of the first requests we made, that he describe in GLEANINGS this cellar, together with his method of wintering so many colonies. He kindly consented to do so; but a pressure of other duties seems to have delayed it until now. While we were talking we mentioned that it must be quite a sight to see so many colonies together, preparatory to putting into the cellar, all in one bunch, after hauling home from the out-yards. One of the yard-men answered that it was indeed a sight, and we thereupon asked Mr. Elwood to prepare a photograph at our expense, when the colonies were again assembled in the fall; but it seems that, although the bees were in a valley, it was quite impossible to get a satisfactory view showing the whole number; so you will have to be content to supplement in imagination what you see in the picture, the remainder of the colonies.

The hives shown in the foreground are the same as all the rest. The standard brood-nest is made up of eight closed-end frames—the frames of Quinby depth, but shortened some two or three inches, we believe. An outside square box of ⅞ lumber, without bottom, telescopes over the frames. When a super is put on, this telescoping shell is raised up enough to accommodate it.

Along in this connection it may be interesting to reproduce an engraving which was shown some time ago in our columns. This shows the modified Quinby hive as used by Elwood and Hetherington. It is intended to show how the frames are separated for the purpose of enabling one to find the queen, etc. The entrance to the hive is through a square hole through the bottom, as shown. This same square hole, if we are correct, is considered very important by Mr. Elwood, in wintering his bees, the same affording ample bottom ventilation, and allowing dead bees to drop out of the way to a greater or less extent. We notice that Mr. Elwood also considers the closed-end frames have special advantages for cellar wintering. That there are such advantages, can hardly be questioned. The closed ends themselves form one wall, and



QUINBY CLOSED-END FRAMES MANIPULATED.

the telescopic cover or body forms another.

The barn, honey-house, and bee-cellar, is, as nearly as we can remember, exactly as shown in the diagram. At the time we were there we considered it a model in the matter of convenience for the special purpose for which it was designed. And that bee-cellar—oh my! When we considered the varying success of bee-keepers who have only a hundred colonies in one cellar, Mr. Elwood's wintering seemed to us simply marvelous, and we regard it so yet.

We take it that Mr. Elwood, under some circumstances, would use artificial heat — that is, providing the number of colonies in the cellar were small enough so as not to give the requisite temperature to produce a change of air; and, so far, he would agree with Dr. Miller.

There was a time when even we ourselves were led to believe that bees needed very little ventilation in bee-cellars; but reports of late have shown quite conclusively that it is a most serious mistake.]

SEX OF EGGS FROM QUEEN-BEES.

HOW AND WHEN IT IS DETERMINED; SOME ORTHODOX TEACHING FROM DR. MILLER.

Dr. C. C. Miller:—Relative to a topic that you touch upon in the last number of GLEANINGS, I should like to ask a couple of questions that you can either reply to directly or through GLEANINGS. I wish to allude to the *determination of sex* in bees. Suppose you take some eggs, just laid, from worker-cells, and transplant them into drone-cells; and, conversely, take some eggs from some drone-cells and place them in vacant worker-cells; what will be the effect of this transposition upon the hatching product? Will the eggs transferred in the first case produce worker bees of increased size, and, in the second case, drones of diminished size? I had always supposed that the germs, or eggs,

when laid by the queen, were indifferently alike, whether deposited in a drone or a worker cell, and that *the subsequent treatment* and the difference in the size of the cell determined what the sex shall be; just as the larger cell and mode of treatment determines what germs shall develop into queens. So with this belief; I ask whether, if a fresh-laid egg be taken from a worker-cell, and put into an empty drone-cell, it will not bring a drone product, if it be treated by the bees as a prospective drone. You are aware that, in vegetable life, there is a certain period in which the bud may change from a flower bud to a leaf-bud, this modification being dependent upon the circumstance of nourishment. The function of sex in the lower forms of life is one not very rigidly determined, and subject to ready modification. The subject is very learnedly and exhaustively treated in the "Evolution of Sex," by Prof. Geddes and J. Arthur Thomson. C. H. MURRAY.

Elkhart, Ind., April 20.

[Dr. Miller replies:]

Some of the veterans may think it a little strange to take up a subject that they suppose so well understood for the last thirty years. But I am a little suspicious that, at the present day, the theory as to some things in bee-keeping is not so well understood by the average bee-keeper as it was a quarter of a century ago. At that time the Dzierzon theory was comparatively new, and had been thoroughly discussed in the *American Bee Journal*. And I may say here that it is a serious mistake to suppose that the theory mentioned is a matter of no practical consequence. The man who would succeed as a practical bee-keeper will do well to be posted in it.

Friend M. says: "I had always supposed that the germs, or eggs, when laid by the queen, were indifferently alike, whether deposited in a drone or a worker cell, and that the subsequent treatment and the difference in the size of the cell determined what the sex shall be." I think it quite possible that such a belief is not very uncommon at the present day. I will try to occupy but little space in giving what is understood by good authorities to be the truth in the case. If it be said that I give nothing new, and that such truths ought to be obtained from the A B C or other standard works, I reply that there are many who have not read such works, and probably will not; that they may get the truth here, and that it may have a little influence in inducing them to make further search in the right place.

The eggs, as they leave the ovary of the queen, are all alike. At the time of the fecundation of the queen, the semen of the drone is received into the spermatheca of the queen, where it is stored, ready to be used as occasion requires, throughout her lifetime. Millions of spermatozoa are thus stored in the spermatheca, which is a small sac having an outlet into the oviduct, or tube, through which the eggs pass from the ovary. As the egg passes this outlet, a spermatozoon generally enters a minute opening in one end of the egg, called the micropyle. If, however, the egg be intended for a drone-cell, then no spermatozoon enters the micropyle, and such egg can never produce any thing but a drone. Get clearly, then, the idea that an egg that is fertilized as it passes the outlet from the spermatheca will produce a worker or a queen, and that one not thus fertilized will produce a drone. No after-treatment can change its sex. I know that some have suggested the possibility that the workers might change a worker to a drone egg by removing the spermatozoon; but no one has given any proof that such a thing has ever taken place, so far as I know; and the minuteness of the micropyle is pretty good proof that such a thing is utterly impossible.

Space will not permit to give full proof of the statements I have here made; but those who are interested will do well to invest 15 cents in the little pamphlet, *The Dzierzon Theory*. But it may be well to give here some little light on the subject. In the first place, let it be understood that queens and workers are of the same sex. A queen is a fully developed female. A worker is a female *not* fully developed. The egg that produces a queen is precisely the same as that which produces a worker; but the difference in the quality and quantity of food given to the larva is what decides that one shall be a queen and another a worker.

The answer to the questions given, in the light of the foregoing statements, can be readily found. What will be the result if an egg from a worker-cell be transferred to a drone-cell? It can produce only what it would have been if it had not been transferred. The spermatozoon is there, and that makes it of the female sex. Whether it will produce a larger worker than if left in its original cell, I am not prepared to say. I have seen workers hatch out of drone-cells, and I could not discover that there was any variation in size. There might, of course, be a slight variation without its being recognized; but I am inclined to the opinion that the difference in size, if there was any, was very slight.

What will be the result if a drone egg be transferred to a worker-cell? Unfortunately, all bee-keepers of considerable experience are only too familiar with cases in which drone eggs are laid in worker-cells, and even in queen-cells. A drone-laying queen or a laying worker may put eggs in any number of worker-cells; but the eggs, not being fertilized, will produce drones and nothing but drones. The limited size of the cell must of necessity have its effect on the size of the drones produced. They can not grow to full size, for want of room. There is no trouble whatever in recognizing the difference in size. They look just like other drones, only in size they are like workers.

Those unfortunate colonies which have nothing but drone eggs will try to raise queens from them. Eggs will be laid in full-sized cups; food will be lavishly supplied, but all to no purpose. A drone egg can produce nothing but a drone. Indeed, it can not even produce that in perfection, when laid in a queen-cell; for, according to all observation, such drone never makes its way out, but always dies in the cell.

Marengo, Ill. C. C. MILLER.

J. A. BUCHANAN'S CASE.

A STATEMENT OF THE SITUATION FROM A BEE-KEEPER AND A LAWYER.

Mr. Root:—I have been much interested in friend J. A. Buchanan's case. This matter of adulteration of honey has been very vividly before my mind for five years past, and I have discussed and considered the matter in nearly all possible phases. In my own experience, which has been somewhat extensive, I have been hundreds of times accused of adulterating, or asked if I did not adulterate. I always took occasion to deny in most unmistakable terms, that I had ever mixed any article with our honey for the purpose of cheapening it. If I had admitted, even as a joke, or to avoid unpleasant remarks, or to avoid a trial in court, that I was to blame in any particular, the parties concerned would have been unalterably convinced that

I was guilty of mixing my honey half and half with something else. When my neighbor asks me if I don't mix a little, I would say, "*No, sir!*" When my customer says, "Is this *all* honey?" I would say, "*Yes, sir.* I have no *other* kind for anybody." When the inspector of foods, the attorney for the inspector, the justice of the peace, where they bring *all their cases*, say, "You had better plead guilty, it will save you lots of bother, expense, publicity, you had better pay your fine, for we hsall have to fine you whether you are guilty or not," answer, "I am *not* guilty, and I will *not* plead guilty, for that would be a *lie*, which is worse than adulteration. You can not fine me legally until I am proven guilty by proper evidence, and I demand a jury of twelve men who shall hear the evidence, and decide impartially whether I am guilty or not guilty. But I will never, for the sake of peace, tell a lie and pay an unjust fine, even though advised to do so by those who *should* uphold justice and right between man and man."

I believe Mr. Buchanan made a great mistake when he paid that fine. He did not know, as *I do*, that it seems frequently to be to the interest of those who administer the law in our (justice) people's courts to have those who are accused fined and disposed of as speedily as possible, without regard to the right of the case. The justice before whom the prosecutor brings all his cases frequently comes to think the one accused is always guilty. The mistake was in advising or listening to the three men who were interested in having him proven guilty, for they would deem it a reflection upon their judgment to have the accused proved innocent. When friend Buchanan heard the justice of the peace say, "Mr. Buchanan, I shall be obliged to fine you, whether you are guilty or not," it was his right and duty to say, "Mr. Justice, I want a change of venue;" and by swearing that he believed he would not have a fair trial, he might have had his hearing before another justice who did not receive the food commissioner's fees.

These things look, to an outsider, to be harsh statements; but any one knows what human nature is, and justices are but men, and inclined to favor those who patronize them.

Friend Buchanan says, in his last letter, GLEANINGS, April 15, "It might be that these men's opinion was given that they might get their fees without any labor on the case." I am convinced that this is an exact and truthful statement of the reasons for their action. I am sorry to be obliged to say so; but self-interest is the strongest motive that guides the affairs of men. Will Bro. Buchanan say what guarantee he has that these men will not get him fined every week or every month? No, friend B., our motto must be, not "any thing for peace," but "any thing for right." At this distance friend B. will not accuse me of interested motives when I tell him, "Always get the best lawyer in reach when your life, liberty, or reputation is attacked, and fight to the death."

Some, who have given the subject no thought, will say, as friend B. does, "I have nothing to do with law, and am not posted." Dear friend, no one can live and breathe and work for himself and family without being affected by the law. You can't get away from it any more than you can from the air you breathe or the earth you tread. When you are sick you call a doctor; when you build a house you hire a carpenter; when you begin to keep bees you consult one skilled in bee culture; and let me advise you, when your reputation, which is dearer than life, is attacked in court, hire one who is skilled in the courts to defend you, and never yield to wrong and injustice while life lasts. We must remember our whole life is a fight against wrong. Here in Chicago our fight is against saloons, gamblers, boodlers, and thieves in high office.

My excuse for saying so much is, that any one of our 50,000 bee-keeping friends may find himself in friend Buchanan's situation, and I hope to guide him safely over this pitfall.

HERMAN F. MOORE.

Chicago, April 23, 1893.

THE ALLEGED ADULTERATED HONEY FROM J. A. BUCHANAN.

A STATEMENT FROM S. T. FISH & CO.

Mr. Root:—On April 4th we received a letter from J. A. Buchanan & Son, Holliday's Cove, W. Va., which in substance stated:

We are getting into trouble with honey we bought from a party in Florida, as it was analyzed and pronounced adulterated with glucose. Now, we can prove that we put up the honey we buy, just as it comes to us; and as we have helpers to do this part for us, we easily clear ourselves of the charge; but when sold in Ohio, the law of this State holds the party good for the offense who sells to the consumer. Did you ever, to the best of your knowledge, sell us any cheap off grades of honey, or honey that you had the least idea as being adulterated? Was the honey we got of you this last fall all pure? or have you any way of knowing? We want a brief statement of facts from each one who has shipped us honey, as shown on the books at our station. Envious competitors are trying to drive us out of the field. We await your response.

Though the above letter was more lengthy, this is it in substance. We responded, April 5:

We note yours of April 4th; and, to begin with, would state that any extracted honey we have sold you has been strictly pure and unadulterated. We are willing to furnish you with an affidavit to this effect; and any documents you wish, call upon us and we will promptly furnish. We are going to do more than this; we are going to send a copy of your letter to GLEANINGS, and, if necessary, attach an affidavit as to the purity, and give you the best advertisement you ever had. Don't hesitate to call upon us, as we hold you in high esteem as business men, and can speak of you only in praise. We await your further demands for our services.

This correspondence thus far explains itself. April 27th we had another letter, advising that the above firm are progressing satisfactorily with their difficulty. They also inclose a clipping from their home paper, which article contains affidavits of proof as to their honesty in the above charge. In that article they speak of us as the most extensive and reliable firm in this country, and we therefore ask for space in your valuable paper to add a few remarks.

Our advertisement with you some issues ago states, "We refuse to handle adulterated honey;" and we repeat herein that we do not want any thing but pure honey, be this honey poor or good; and if we are deceived in any instance, and become aware of such fact, we shall prosecute such parties to the full extent of the law.

The honey we sold to above firm was such as we received direct from bee-keepers, and in their instance it was stock that we directly purchased in carload lots, and from a territory where adulterating is an exception. We are "cranks" on the adulteration of honey, and only regret that our power is so limited in this vast territory, and that your valuable paper does not assist the cause and remedy the present state of affairs.

At one time we surprised you with our statement of the amount of adulteration done in this city. We hope the coming convention will be the opportunity for deciding on the topic of adulteration.

We have private families who occasionally come here for pure honey, but we refuse to sell

in such small quantity, and know of no place where we could recommend them to buy 5 lbs. of guaranteed pure extracted honey. Consumers are in the habit of buying extracted honey, and get such a poor article that we are troubled with the statement that we sell manufactured or adulterated comb honey, and in each instance we quote that A. I. Root, of Medina, Ohio, will pay into the thousands for proof that any *comb* honey sold has not been manufactured by the bee. Let this be a warning to any bee-man, that we do not want any honey but strictly pure and unadulterated. At times we have received consignments of honey-dew; but this we have sold on its merits, not for eatables, but for the manufacture of cockroach paste—in our minds the only purpose it is fit for.

We hope this article will vindicate the firm of J. A. Buchanan & Son, in the minds of all bee-men; and as long as we handle our honey department as extensively as we have the past few years, we will interest ourselves in fighting any cause to better present conditions.

Chicago, Apr. 29. S. T. FISH & Co.

[We are very glad to receive the above communication, as it helps to vindicate J. A. Buchanan, and because we know S. T. Fish & Co. are above reproach in the product they sell. They, as much as or more than any other commission house we know of, seem to have a kindred feeling with the bee-keeper, and such as every honey-seller should have. It is hard for us to believe, however, that honey is so fearfully adulterated as to make it difficult to get five pounds of guaranteed extracted honey in their city. Perhaps they do not mean to convey that impression. If the small dealers in Chicago adulterate for themselves, let the Bee-keepers' Union get after them "right quick."]

RAMBLE NO. 84.

A DESCRIPTION OF INYO COUNTY, CAL.

IN the early portion of the winter a well-built gentleman with a straw hat and with a benign and pleased expression beaming from his face, and a general aspect that indicated a camper, entered the Rambler's den and introduced himself as Mr. H. Trickey, from Inyo Co. We had a very pleasant chat upon the bee and honey interests of the Sierras; and when he departed I made up my mind that his name was no indication of his character, for he did not seem that way inclined. During the few hours' sojourn I proceeded to focus Mr. Trickey's eyes and thoughts upon Inyo Co., and will give you the result.

Mr. T. resides in the town of Bishop, and had journeyed to our southern counties, a distance of over 250 miles, his traveling companions a horse and buggy, and a small tent that could be tucked away under the seat of the wagon. After spending a few months looking over the southern counties, and attending the Bee-keepers' State convention, he journeyed back in the same order in which he came, having, no doubt, a free and glorious time.

Inyo County is probably one of the most peculiar regions upon the American continent. Extremes meet in startling contrasts—arctic cold and torrid heat. Mount Whitney, said to be the highest mountain in the U. S., rises above all of the Sierras on the west, and south of it the surface of the land sinks to hundreds of feet below the sea-level, and forms the desolate and once mysterious Death Valley. The county, though very large, has but few fertile valleys, and the principal one is Owen's River Valley, about 72 miles long and from a half to 5 miles in width. Owen's Lake, into which the river empties, is an inland sea, and is brilliantly clear and limpid, but so strongly impregnated with soda that the manufacture of soda is a growing and profitable industry. It is also something of a summer resort, for the waters are noted for curative qualities. It is no trick at all, Mr. Trickey says, to cure catarrhal troubles. Stock-raising and dairying is one of the chief agricultural pursuits; but the stock, according to Mr. T.'s progressive views, are a scrubby race, and he thinks there is a chance for some one to make a profitable venture by introducing a better grade of cattle.

In all of the southern counties there is an inquiry for good beef, and it could be easily supplied from this mountainous county. The many mountain streams of ice-cold water, flowing down from the regions of perpetual snow, give ample opportunity for irrigation; and while in our orange-grove irrigation the water is carefully used and the gates kept under lock and key, in Owen's Valley the water is so plentiful that every one is at liberty to open the gates and help himself for the feeding of cattle. Alfalfa is raised extensively; and under irrigation it makes a rank growth. It is allowed to become blue with bloom, and the thousands of acres of it make the region a sort of bee-keeper's paradise. So many farmers raise it that it gives a continuous bloom for several months, and two crops of hay are secured each season.

Mr. Trickey owns 400 colonies; and instead of having them located out in some mountain canyon the apiary is on the home place, which makes it very convenient for a man who is tied down with a family. Mr. Trickey, however, baches it, and is not so tied, as he might be. The mountains would also be a bad honey-pasture, for there are but few wild honey-producing flowers in this region, while there is but little sage of any kind. The honey-flow from alfalfa commences in June and continues for three and many times four months. Comb honey is the exclusive production in this valley, and Mr. T. thinks the honey superior to the Nevada or the Arizona honey. During the honey-flow, honey can be left around anywhere, and the bees will not notice it. He had frequently had a thousand pounds of beautiful section honey exposed on hives for several hours, with no bad results.

As to overstocking the alfalfa fields, Mr. T. thought it might be done; but in a radius of five miles from his apiary there were 2500 colonies, and he didn't see that it made much difference in the yield. All apiaries were affected alike when the honey-yield commenced. All were very busy at once, or stopped in a like sudden manner. The yield of honey will average about 70 lbs. per colony; and, though the yields are not so astonishing as in other portions of California, the yield is more uniform every year. Since he had been in the business there had not been a season of failure.

Mr. T. uses a hive with a very small brood-chamber; uses but little foundation—only an inch starter in the sections, and none in the

brood-chambers. The sections are put together with a light mallet, and the inch of foundation put in at the same time; and when the super is filled, the job is finished, and the sections handled but once. Two thousand sections per day could be thus handled, and it was an easy trick to do it without any of the new-fangled daisy machines.

Mr. T.'s apiary is laid out on the railroad plan, and his sun wax-extractor is also mounted on the railroad, and can be moved into any position desired.

The valley is well stocked with bees; and among the most prominent bee-keepers is Mr. Wm. Muth-Rasmussen, of Independence. A healthy local organization exists, and has a

bright future before it. Mr. T. thinks that, in bee-keeping as well as all other branches of industry, a person who goes into it must step up or step out.

One disadvantage that bee-keeping in that valley had to contend with was getting the colonies up to the proper strength to get the first honey-flow, and Mr. T. thought it would be a good trick to purchase virgin queens and stock up early, and that was one of his reasons for visiting the bee-keepers of Southern California, to find a man who could supply him with a small carload of queens.

Inyo County is something of an out-of-the-way place, and is visited only two or three times a week by a sort of accidental train over a narrow-gauge railroad from Reno, Nevada.

The laborers in this valley are mostly Piute Indians, and they are very good workers. In fact, they have to step up and work or step out, for the large game is driven to the mountains, and a living from game would be precarious.

The cold mountain streams were formerly without fish; but the introduction of the speckled trout makes life worth living, to the lover of the fly and rod.

Ants are nearly as troublesome in Inyo Co. as further south; and the producer of comb honey has to be careful to keep it from their trespassing habits.

After recounting my troubles with ants last season, I received a postal with the following information upon the subject:

A little powdered corrosive sublimate, mixed with three times its bulk of lard; run a tape or large cord through it, and tie it around your table-legs or around cans of provisions. It will keep the ants out. MIGRATORY BACH OF FLORIDA.

I felt very grateful to this bach, and have no doubt others of the fraternity will feel the same.

"A fellow feeling makes us wondrous kind;" but according to Dr. Miller's vocabulary, I ought to call this bach a hog; but the fact is, Rambler was always taught to be polite, and to avoid such animal references. But the doctor is probably excusable. I suppose he includes certain phases of politeness in his list of "don't knows." RAMBLER.

E. FRANCE'S REPORT.

HOW THE BEES HAVE STOOD THE WINTER.

Last year was the poorest one that we have had since I have been in the bee business. When the honey-gathering season was over we had not a pound of surplus honey, and, worse than that, we found that the bees had not a winter supply of feed in their hives; so for the first time we bought sugar to feed. We bought 14 barrels of granulated sugar to feed them, and during the month of September we fed the most of it. We had a large boiler made to melt up old combs into wax, and we used that boiler to make our feed, which we did as follows: To 18 gallons of rain water we added 250 lbs. of sugar and 25 lbs. of last year's honey, candied. We heated this to the boiling-point, skimmed while warm, and, when cool, fed it to the bees. Then we packed the chambers with straw or chaff cushions as usual; then we left them to their fate until spring. The out-yards we did not see again until April.

The winter set in early—about the middle of November. Snow became deep, and drifted badly. It was very cold all winter. The bees were shut in their hives by the cold for 125 days without a cleansing flight, and then many of them could not get back—too cold. Many colonies had the dysentery badly, and soiled their combs very much. I send an itemized report of each yard. You will notice a great difference in the death rates, some yards losing a greater proportion than others. We find that, where the snow was the deepest among the hives, the loss was the most; the less snow, the less loss; the dryer their condition, the better for them; the damper they were, the more they died. All had honey-boards over the frames next to the bees, and pretty well sealed down, as they were not raised after the middle of September.

HOME YARD, MARCH 30.

First-class colonies	50
Second-class colonies	34
Third-class colonies	8
Alive	92
Queenless	3
Dead	7
Fall count	102

ADKINSON YARD, APRIL 3.

First-class	23
Second-class	18
Third-class	8
Alive	49
Queenless	2
Dead	36
Fall count	87

WHIG YARD, APRIL 5.

First-class	36
Second-class	23
Third-class	6
Alive	65

Queenless	4
Dead	11
Fall count	80

WATTERS YARD, APRIL 8.

First-class	59
Second-class	6
Third-class	1
Alive	66
Queenless	1
Dead	9
Fall count	76

CRAVIN YARD, APRIL 10.

First-class	65
Second-class	9
Third-class	5
Alive	79
Dead	12
Fall count	91

KLEBENSTINE YARD, APRIL 15.

First-class	38
Second-class	11
Third-class	1
Alive	50
Dead	39
Fall count	89

I think I hear some one say, "There! that is where the trouble comes in—tight covers will kill the bees every time; no escape for the moisture."

Now, don't be too fast. Look at the home yard—102 colonies, and 7 dead. They all had sealed covers, and should have been sealed the closest of any yard. They were fed first. There was not a cover raised in the home yard after the first of September, so they had more time to seal the covers. No, I don't think that sealed covers had any thing to do with the losses. We always winter that way, and usually have good luck. But why did so many die? Poor condition at the commencement of winter; too long cold at a time; no chance for a cleansing flight; too much snow, making the hives damp; and we find that a great many starved with plenty of feed in the hive. The cluster would eat what was right over them until they got up to the top, and then, as the weather was so cold, they did not work off sidewise to get feed, then starved. We did not find a single swarm dead that had feed in the top of all the combs.

The prospect for a honey crop is good. Clover is splendid. If we have the right kind of weather at the right time I think we shall get a good crop. You will see that there are 400 colonies now alive, and there is still one yard not counted, so I think we can count on 400 colonies after all spring losses. I see by our records that the largest crop we ever had was taken from 395 colonies, in 1886—42,489 lbs., so our chance is good yet.

We have had some very nice weather this spring. First pollen, April 4. But just now we are having a very cold storm—cold rain yesterday, April 19; rain and snow mixed, all night. To-day, April 20, rain and snow mixed. Every thing is soaked full of water. This ought to make the clover grow, but it is a little hard on weak colonies of bees just now.

Snow this morning, April 21, 2 inches; snowed a little all day. At 4 P. M. it is snowing hard.

Dr. Miller says, in Stray Straws, April 15, "In making reports with sealed covers, say what covering, if any, was over the sealed covers." Our hive-tops are 7 inches deep. We fill that space with straw on two-thirds of the hives; the other third have chaff cushions 6 in. deep that we put on under the covers, but over the honey-beards. We have tried putting the cushions under the honey-boards right on the frames; but I never saw any advantage in so doing. We think it is just as well to put the packing *over* the honey-boards.

LOCATION FOR AN APIARY.

Much depends upon the location, or, rather, protection for the bees to winter well out of doors. They must have a dry and warm location, well protected from the wind—our Klebenstine yard is located in quite a deep valley. The bees are on the north side of the valley, facing the south; two rows of hives on the north side of the apiary are up on considerably higher ground than the three south rows, and the two upper rows are better protected from the wind by a bunch of trees and brush just west of them. The upper rows have wintered much better than the three lower ones. The lower rows are on level ground, and more exposed to the west wind driving up the valley. Snow drifts badly about them, and fills in deeper than it does with the upper rows. Snow remains on the ground longer in the spring, keeping the bees damp. There is always greater loss with those lower rows. We find the same difference in other yards, from the same cause. Our home yard is on high ground, protected by a high board fence. Their location is dry and warm. You see they have wintered pretty well. The Adkinson yard is very much like the Klebenstine. They have died badly; but there, again, the losses are mostly in the lower rows.

Platteville, Wis. E. FRANCE.

QUEENLESS COLONIES IN THE SPRING, ETC.

SEASONABLE QUESTIONS ANSWERED.

A correspondent writes: "I find I have several queenless colonies this spring. What had I better do with them? If it is best to unite them, what is the best method of doing it? Please reply through GLEANINGS."

What to do with these queenless colonies will depend upon two things; first, the wants of the correspondent; and, second, the condition of the queenles coloniess. If the colonies are strong in bees, and the correspondent wishes more colonies than he already has, then I should give them a frame of brood from some colony having the same which it can spare, and send south for a queen for them, or let them raise a queen for themselves, just as my means would allow. The colony will become self-sustaining sooner if a queen is procured for them than they will by raising their own queen; for most likely the first lot of cells built will have to be destroyed, on account of not having drones in the apiary thus early. To raise a queen before there are any drones for her to meet often proves a very vexatious thing; as an unfertile queen is hard to find in order to be rid of her; and if not fertilized she will prove to be a drone-layer, or worse than useless. If the colonies are to rear their own queens, brood must be given them once a week till they have a laying queen, which makes extra work; still, if anxious for bees this work is not to be shunned, for such colonies with their young queens often prove among the best for honey during the season. If the colonies are weak, or the owner does not desire increase, the best thing to do is to unite

these queenless colonies with those having queens. To do this uniting I would employ one of two plans at this time of the year; and, as far as possible, unite the queenless colonies with the weaker ones having queens. The first plan I would use is this:

Select a time just after the bees have had a flight and have become quiet, if the weather is cool, or wait till near evening if the weather is warm, and then carry the colony having the queen to the stand of the queenless one, and shake the bees from the latter off their combs, and from their hive, in front of the hive having the queen, now on their own stand. Previous to shaking the queenless bees off their combs, blow some smoke in at the entrance of the one having the queen, till they set up the hum of "conquered," when this hum will be interpreted as a call by the queenless bees, which will run in immediately, and no fighting will result. After dark, take the now united colony to the stand formerly occupied by the one having the queen, and remove the hive and all pertaining to it from where the queenless colony stood, and no bees of any amount will return to be lost. The other plan is this, and often works nearly or quite as well as the first:

Crowd the bees having the queen upon as few combs as possible, with a division-board, having a half-inch hole near the center of the same. Having previously taken the most of the combs away from the queenless colony preparatory to uniting, set the remaining combs with the adhering bees in the space on the opposite side of the division-board, closing the hive. Have the entrance open only on the side occupied with the colony having the queen, and the bees will unite of their own accord in a short time, as they will open up communication through the hole in the division-board, soon after the queenless bees are placed in the hive. Use the same precaution about removing the hive, stand, etc., from the situation occupied by the queenless colony, and the work is done.

FASTENING COMBS IN FRAMES.

Another correspondent writes: "I have some bees in box hives which I wish to transfer in apple-blossom time. Please tell me through GLEANINGS the best and cheapest way to fasten the combs in the frames when doing this transferring."

First, cut the comb to fit the frames snugly, for on this depends much of the success in fastening them. To do this best, lay the frame on the comb and mark the latter just the size of the inside of the frame. Now hold the knife, in cutting, at a slight incline from the perpendicular, so that the septum of the comb shall be cut a little larger than the mark, and in this way the frame will crowd over the comb so as to make it nearly secure without any fastening. In fact, I have transferred many combs in this way, and not fastened them at all, more than the spring of the frame will do. However, it is best to use some other precaution, so I generally melt equal parts of beeswax and rosin together, keeping the same at the right temperature by placing the dish containing it over a burning lamp, when a drop or two is poured into an occasional vacant cell next the frame, which hardens and fastens the comb in place. To do this best, procure some old tablespoon, which is usually to be found in all households, and form the point of the bowl into a funnel shape by hammering it around a steel wire nail of the right size, held in a vise or otherwise. In this way a nice little spout can be made for the spoon when it is ready and handy to use for many purposes. To keep the wax and rosin from dripping from the bottom of the spoon, draw or push the bottom of the spoon over the edge of the dish in removing, so as to remove the surplus wax. In this way combs may be fastened as securely as with wire, twine, or wooden sticks, or clasps, and has the advantage in that the hive does not have to be opened in a day or two to take off these things; neither is any brood killed, as is the case with sticks or wire. G. M. DOOLITTLE.

Borodino, N. Y., May 1.

[With our experience in transferring box hives, or movable-frame hives that have been in use in the hands of farmers and slipshod bee-keepers, we have made up our mind that it does not pay to try to use over any combs in transferring. We simply use the Heddon short way; namely, drum out two-thirds of the bees, including the queen, and put the driven bees in a hive with frames of foundation on the stand formerly occupied by the box hives. Place the latter back a little way, with its entrance at right angles to the entrance of the new hive. In three weeks' time, or when all the young bees will have hatched out, drum out the remainder of the bees in the box hive, and, as Mr. Heddon says, you have, in the new hive, instead of old crooked combs, newly built and perfect combs from frames of foundation, all securely wired in; an old box hive that will make first-class kindling-wood, and a lot of old crooked combs that can be put aside to be rendered into wax at the first convenient time. After trying the two methods of transferring, we decidedly prefer the Heddon short way. As we see it, it is cheaper and far more satisfactory than cutting up and fitting combs into frames.]

HUMBUGS AND SWINDLES.

LOOK OUT FOR HIM!

UNDER date of April 15 we have a letter inclosing a clipping from a local newspaper, as follows:

MRS. HODGDON, OF GARNET MESA, SWINDLED BY B. F. LEWIS.

Mrs. Hodgdon, one of our most respected residents, has been made the victim of a shark many times worse than the little trick played upon Mr. Duncan two weeks ago.

A man calling himself B. F. Lewis some months ago went into partnership with Mrs. Hodgdon in the bee-business. She furnished the larger part of the capital, and Mr. Lewis, apparently sincere and honest, was given the management of most of the business. It now transpires that he sold large quantities of the honey, and kept the money.

A large part of the stock was bought upon notes upon which Mrs. Hodgdon went security.

Several notes are held by different parties without her security, and they will be losers. Mrs. Hodgdon was called away some time ago to attend a friend in sickness, and Mr. Lewis made way with a large quantity of both bees and honey. Three weeks ago he was supposed to go up North Fork on business, taking her team and wagon, and has not been heard from since. A diligent search is being made for him by the authorities.

The writer is a widow lady living in Delta, Colorado. As other parties have before this complained of B. F. Lewis, and it seems this is not the first "speculation" of the kind he has been engaged in, we think it no more than fair that the public be warned. Permit me to say, also, that it is very unwise to let a man without reputation or property get hold of such an opportunity as the above, to swindle the unsuspecting. Other complaints come from California in regard to the same man.

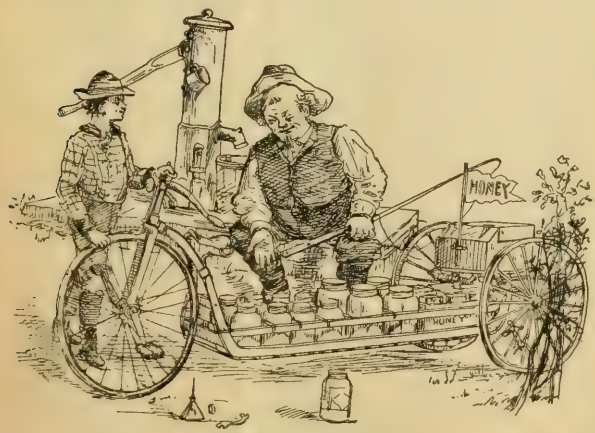
JAKE SMITH'S LETTERS.

THAT BOY ZED AND HIS HUNNY-PEDLIN BY SICKLE.

MR. *A. I. Gleenings—deer sir:*—You never see my boy Zed, did you? He's a grate one, I tell you, a regler geniuss. Oanly 15 (fifteen) yeer old too. Fifteen comin this spring. Why, when that boy wuzzent 5 yeer oald he spent 2 weeks a gittin up a dubble harness for the cat and dog. But it diddent take 2 weeks for that cat and dog to git that harness in 1000 snarls when he poot it on them. And the way the hair and fir flue was a cawshun.

A few yeer ago Zed cum to me and sed he wanted to trade for a by sickle. I toald him I never hear tell of sitch a sickle, and he had no call to have a sickle enny way, for nowadays we diddent use sickles, but cut all our grain with reapers. Then I found out that the newfangled name for velossapedes was by sickle. I let him trade, for it was an oald 1 and diddent cost mutch. I doan't believe in yumerrin a boy to mutch, but it izzent best to be too hard on him nuther. Take him all in all, Zed's a good boy, if I do say it whitch ottent to, and when he duz his fare share of the work I beleave in him havin sum fun.

Well, for a while Zed had a time with that by sickle, but sumthing got out a kelter with it and it was piled away at the barn. Awhile after you begun to send me your paper I notust that Zed wuzzent playin around and carryin on his tricks as yousual. He did his work up regler, and he eat well. So I wuzzent skairt about his being sick. But for a good menny days he seemed to be out of site a good eel.



ZED SMITH'S INVENTION.

1 day he cum to me, and he sez, "Pa," sez he, you see he calls me pa nowadays, sints the gals is a growin up and wants to be kind a stilish like, and doant like to have him call me dad no more. Well, as I was a sayin, he sez, "Pa," sez he, "cum out here," sez he. I sez, "What do you want, my son?"

"Oh! you cum out and see," sez he.

So I went out. Wood you believe it? he had took that oald by sickle and hede took a pare of oald wore-out buggy-wheels, and hede rigged up a contrivance soze he cood lode onto it and run it. Then hede got a lot of froot cans and loaded onto it, soze to show how it cood be loaded up with hunny. But you can see all about it into the pickter.

I felt proud a that boy. Sez I, "What ever poot sitch a thing in your hed, Zed?"

"Why," sez Zed, "that there bee paper what Mr. Gleenings sends you tells how he carries the male and sitch things on a by sickle, and I thot it wood be handy to have it this way."

"It's offle handy," sez I. "Them fellers talks in that paper about haulin hives. What's to hender haulin em on this?"

Then I notist his flag, and sez I, "Is that the way to spell hunny?" sez I.

"Yes," sez he, "that's the right way."

"I spoze it's all right," sez I, "and maybe I'd ot to lurn to spell like you, Zed, but I guess Ime most too oald, and that looks like a foney way to spell."

Zed's a good skoller. And well he may be, for he's gone to skool 100 times as mutch as ever I did.

I sez to him, sez I, "Zed, your a boy after your father's oan hart. Sum of these days Ile git 1 a them regler by sickles like Mr. Gleenings takes on so about, and you and me can both lurn."

JAKE SMITH.

CARNIOLANS DEFENDED.

JOHN ANDREWS SAYS SOME GOOD WORDS IN THEIR FAVOR.

On page 219 Mr. R. F. Holtermann, writing on the different strains of bees, says: "The Carniolan bees, I believe, possess some valuable traits; yet, among those traits, are others which, I believe, render them unfit for the average bee-keeper."

When I read his statement I wrote him asking what those "undesirable traits" were. His answer was, that his experience dated back to the time when Jones received the first importation from Mr. Frank Benton. That, I think, was 12 years ago; and you may remember the Carniolans first imported were mixed with the yellow bees, the cause of which has been explained at different times by Mr. Benton.

If I am right in my impression, it was some years after the first importation before they went far enough back to get the gray Carniolan bee. After getting his answer, that "they swarmed too much," he further says: "Now, it is just a question with me, if perhaps, by restricting the queen to a certain space in the hive, we may not be able to overcome, to a certain extent, this swarming trait, if we can; then the bees may be of some use to the specialist; but the average bee-keeper throughout the country will neglect tinkering that much with his bees; and the result will be, he will be better off with the Italians."

I wrote him that his suggestions on contraction would *not do it;* I would give the queen all the room she wanted, and that I never saw too many bees in the honey-flow; and after the flow is over, then you can contract, if you wish; but I never saw too many bees for me, at any time.

Now, to bring this matter to a close, I will say that I have had a number of letters this spring, stating that the most of their Italians were dead, and that the few Carniolans they had were in fine condition. Now, what suggestion does this give to the "average bee-keeper"? Would he be better off with Italians? Now, I wish to say here (and if the editors think it is too much of an advertisement I will pay for the space), I can get double the extracted honey with the Carniolans that I can with the Italians; and I took a twelve-year course with the Italians years ago; and, so far as I can see, my bees now are in a fine condition, and *all* of them too.

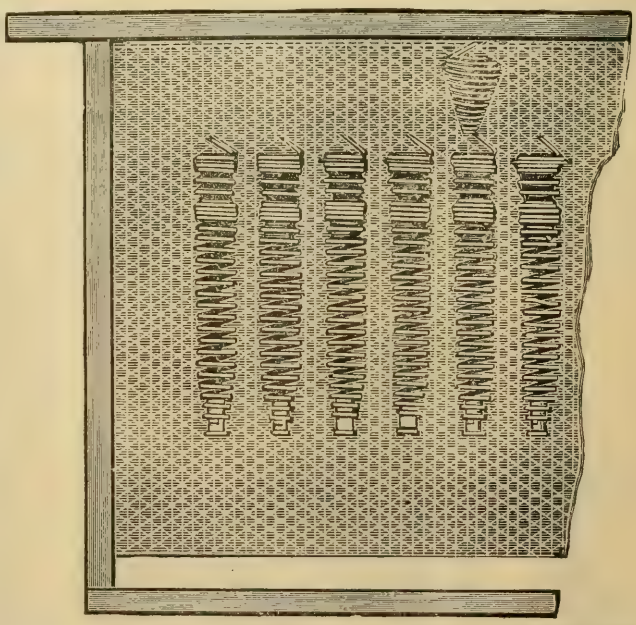
JOHN ANDREWS.

Patten's Mills, N. Y., Apr. 5.

REARING CHOICE QUEENS.

AN EASY AND SIMPLE WAY; WHEN AND HOW TO DO IT BY THE USE OF QUEEN-CELL PROTECTORS.

When the swarming season arrives, hive a few of the first swarms, and put them on their original stands. Give them sections; and from these young swarms, which will contain all the field-workers, get all the honey possible. But the hives that have cast these swarms, which will contain only the young bees, the brood, and all the queen-cells, move to *new* stands; let them remain without further attention for five, six, or seven days (not long enough for one queen-cell to hatch, lest all the other cells be destroyed), and then open each hive; sort out and carefully trim, and put in cell protectors all its queen-cells. Attach the cages (see cut), and hang them all back in the hive on the side of one of the center combs. I generally leave out one of the combs, unless a follower is used, when I thus put the cages in a hive; but as the cages are in the space between the combs, it is not strictly necessary. After all this has been done, close up the hive and wait until the time for all the cells to be hatched, and then open the hive again; and, if you find six or eight fine young queens in the cages, break up the colony and make as many nuclei from it as you have young queens. Put one of the young queens into each nucleus, and leave her there until she lays; then do with her what you please. The way to make the nuclei is to put one comb of these young adhering bees and an empty comb at the side of it in an empty hive, and leave the entrance to the nucleus hive closed 24 hours; then open the same, and, as all the inclosed bees are young, they will stay, and all will be well. There is considerable gained in using young bees to raise queens, as the young bees will stay in a nucleus better than old bees, and you can raise so many young queens, and get them laying before the young bees become field-workers.



WEST'S QUEEN-CELL PROTECTORS AND CAGES, SHOWING HOW ATTACHED TO THE COMB.

Queen-cells for a queen-nursery should be taken from the best strains of bees; and if you desire increase by natural swarming, destroy the cells in inferior-blooded colonies that have cast swarms, and give them a select young queen from one of the before-mentioned nuclei. You can introduce the queen from the nucleus with the nucleus bees if you wish to, by taking out a frame from the hive in which you wish to introduce the queen, and then taking the frame, containing the queen and bees, from the nucleus hive, and putting it in the place of the removed frame in the queenless colony.

To introduce in this way, care must be used not to frighten or get the queen to running; then the queen will generally be received.

I hatch a great many queens in the aforesaid way, with great satisfaction, and always keep through the swarming season a goodly number of choice young queens in nurseries and nuclei in each of my six bee-yards.

By removing the queen from *any* colony you can hang in as many caged cells as you please, and the bees will care for the queens when they hatch; and you may keep the same colony raising young queens, using the queens wherever you need them. You can also hatch young queens in a colony that has a queen of its own; but the bees will not nurse the new mothers after they hatch; but, on the contrary, if they could they would kill them; and queens allowed to remain in such a colony a day or two after hatching are not as good as queens allowed to remain after hatching in a queenless colony.

Before I forget it I will tell you that, when I introduce queens in the spiral wire cage, I crowd two or three penny-shaped peppermint candies (I buy them for this use) in between the coils on the upper end of the cage for a stopper, and the bees will eat out these candies and liberate the queen.

Much more might be said about introducing queens, but I will leave that now and tell you something about introducing queen-cells.

If an increase in colonies is not desired, in the swarming season, when good queen-cells are plentiful, cut out such cells as you want to save, and put them in queen-cell protectors (great care must be taken in handling cells or they will not hatch). Now, suppose you have eight cells.

I trim and put in the protectors, then go to eight colonies that have the poorest queens; kill the queens and destroy their cells, if there should be any, and at once place in each colony one of the protector-inclosed cells. The queen in the cell, if it is a good cell, will hatch out in due time, and soon go to laying, and, as a rule, this colony will not swarm; and if there is honey in the field they will gather a large surplus, and they will be in good shape for winter. In my out-yards, to make doubly sure of a cell's hatching in each hive, I sometimes put into a hive two protector-inclosed cells; but to one of them I attach a cage; then if both cells hatch I can use the caged queen elsewhere; if only the cell in the cage hatches, liberate the queen from the cage, and she is at home. In this way one can always have a surplus of queens on hand to use wherever needed; and if care is used in selecting cells from the best-bred bees, you can breed all your bees up to a high standard, and keep them there; and you can control your swarms to such an extent that you can fix your increase to suit yourself. N. D. WEST.

Middleburgh, N. Y.

[This may seem a little like a free ad. for a well-advertised cell-protector and cage; but as there are many valuable hints given above, no one will object, but, on the contrary, be glad to learn how to raise choice queens at so insignificant a cost. Indeed, we believe friend West presents the best and simplest method for the honey-producer. There is no better time to requeen or replace poor queens with good ones than during the swarming season, when an abundance of good swarming cells are on hand from select queens.]

A VISIT TO A. N. DRAPER.

A BIG TESTIMONIAL FOR THE LARGE DADANT HIVES.

Business calling me to the beautiful little city of Upper Alton, the home of friend A. N. Draper, I made it a point to visit him and see how his bees had wintered in those large modified Dadant hives that he prefers. He very kindly unpacked hive after hive for my inspection; and I must say that any one who advocates large hives and plenty of bees would have been jubilant at the sight; for, notwithstanding, the severe winter we have just passed through, I never saw bees in this latitude in finer condition. Four and five frames of brood, and plenty of bees, were seen in every hive here, the first of April. Friend Draper has given in former issues of GLEANINGS his method of packing with dry forest-leaves; but for the benefit of those who have not read it I will give a brief description of his methods.

In early October, after seeing that each colony has an abundant supply of at least 40 lbs. of honey, he removes the three frames that have the least honey in them, and places two thin dummies or division-boards on each side of the remaining frames (8 in number) with a space between the dummies and the side of the hive. This space he proceeds to fill with dry forest-leaves, and then fills the six-inch cap full of the same leaves; the cap is then placed in position on the hive, first spreading a cloth of some heavy material over the frames and bees. He claims that the leaves, brought right down on top of the bees, hold the heat, and that, when the sun shines, even in the coldest weather, it imparts some heat to the leaves; and as all moisture passes off rapidly the heat is retained. At any rate, I never saw finer results so early in the season. Many will claim that ordinary eight-frame hives would have wintered the bees just as well, had they been packed in a similar manner; but scattered here and there among the large eleven-comb hives were quite a number of eight-frame old-style Heddon hives, which are practically the same as the Dovetailed hive. These he had packed the same as the large hives, as nearly as it was possible to do, and in the same manner as described by himself and also the Dadants in former issues of GLEANINGS, by taking lath and placing them in such a manner around the hive that quite a space was left between the lathing and the hive-body, which was filled with leaves, and the cap also filled with leaves. We opened hive after hive of these, and I have no doubt that, had friend Dadant been there, he would have said repeatedly, "Didn't I tell you so?" for, without a single exception, they were not as strong in bees or brood as the larger hives, and in most cases markedly so.

It goes against the grain to make these admissions, for I am decidedly in favor of a less cumbersome hive; but facts are stubborn things. Of course, in milder winters the difference would not have been so great; but I am forced to the conclusion that, to those who must have strong colonies early in the season in order to secure any surplus from the white clover, large hives and ample protection are required.

The prospects for a honey crop in that vicinity are fairly good if the clover yields honey this season. His vicinity abounds in elm, maple, box-elder, and fruit-trees, which is one reason he can have good strong colonies for the white-clover harvest; but friend D. is greatly troubled by the apprehension that the fruit-growers in his vicinity will, by spraying their trees while in bloom, ruin his fine strong colonies at his home apiary and the out-apiary adjoining. He has some 320 colonies, and the loss would be a severe one to him. There should be a law passed prohibiting the spraying of fruit-trees until the blossoms have fallen. E. T. FLANAGAN.

Belleville, Ill., April 5.

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

HOW FAR DO BEES GO FOR HONEY, AND DO WELL?

The following is a valuable article that we take pleasure in copying from the *American Bee Journal*. We have known some of the facts presented to be true; but a little substantial confirmation helps to establish them.

How far do bees go in search of honey, and still do good work? is a question that seems to have received some attention of late, and bee-keepers differ widely in their opinions, some limiting the distance to 1½ or 2 miles, while others go to the opposite extreme, and say they will go as far as 12 miles. However, when honey is plentiful the former figures may be nearly right, and very few bees work outside that distance; while, if honey were scarce in their immediate vicinity they would probably go a far greater distance than that, although I never saw bees go over 3½ or 4 miles from their homes.

Well, last summer was the first time I had a chance to test the matter a little, as last year was the poorest of the several poor seasons we have had in succession, and the bees were in a starving condition all summer, until the fall blossoms yielded their precious sweets, which gave the bees more than they could do for about five weeks.

The main part of our fall crop of honey is from smartweed; now, this smartweed, or whatever they call it, has its peculiar ways of blooming, and also a decided difference in the amount of honey it produces. That which grows in hilly regions has

usually small bloom, and sometimes yields sparingly, while that in the bottoms blooms from one to two weeks earlier, and has larger and more perfect blossoms, and gives a good supply of nectar before a bee is seen working on the same plant on the hills.

As my apiary is located about two miles from the bottoms, the bees began working very briskly for several days, and I noticed not a single bee working on the smartweed near the apiary; so I immediately went to the bottoms, and found the smartweed in full bloom, and just literally alive with bees. This satisfied me that my bees were working at least from 2 to 2½ miles from home, and doing good work at that.

The next thing I wanted to know was, how long it would take a bee to get a load of honey at that distance, as no other honey was being gathered at that time, and the working bees could be seen in the morning going in a steady stream toward the bottoms — like a swarm that is hurrying off to get better quarters than they had at home. So I sprinkled flour on a good many of the bees that emerged from a certain colony, and waited for their return.

The first bee returned in 13 minutes, and was well loaded with pollen from corn tassels, which it evidently gathered in some of the neighboring cornfields. The second returned in 32 minutes, and had a load of honey, and a little smartweed pollen. Several entered at 34 minutes, and a few at 37, and all the way up to 40 minutes. All that returned after 30 minutes were well loaded with honey, and some carried small pellets of smartweed pollen. The average length of time it took them to go to the bottoms, load themselves and return, was about 36 minutes.

To tell just how much more honey they would have gathered if they had had the flora near by, is hard to tell—undoubtedly a good deal more honey; but bees can do good work at the above-named distance. F. X. ARNOLD.

Deer Plain, Ill.

MORE FAX; BY A MODERN "JOSH BILLINGS."

Mister Editor:—I send you sum more fax which I hope will be faverable received. I was educated out heer in the Hoosier State, and, although I am only sort o' middlin' in gramer, I kin pride myself in bein' a mity good speller. These here fax ain't so bulky, but the awther hopes thay will make up in quality what thay are lackin' in quantity, as the poet sez.

One yeer's actual 'sperience in bee-keepin' is wuth five yeer's of theorizin'.

A man what keeps bees in a log gum ought not ever komplain of a skeercity of honey.

The world has a milyun roosts for bacheler bee-keepers, but nary a single home.

A good menny supplies and fixtures don't operate well because of inferior finish; what we want is better workmanship in kombinashun with first-class macheenery.

After cagin' queens with drones, konfinin' 'em in a hive, and lettin' 'em sail round at the end of a fine silk thred like a kite, fer the purpose of findin' sum improvement on the method of fertilizashun, I have, at last, kum to the konclushun that the less you monkey with the original plans of the Creator, the best it will allus be.

Mister Root, don't you think it is a fax if I could produce a strane of bees havin' five spots on thair wings that thare would be a mity big demand fer 'em? It haint the git up and git, you know, but the looks what I would be after now-a-days. However, fer the present, don't enny body send fer beautiful polka-dot queens until I have 'sperimented fer a season.

A beginner wants to know what is a good remedy fer bee-stings, and I herewith give a receet: Jist as soon as you find you have been stung, which will not take more'n 15 minits after the bee has got in his malishus work, you will keep calm and cool; fer if you git mad it will hurt worser. Remove the stinger, and at the same time and motion apply a little saliva, anuff to warsh off the pizen, and keep it frum soakin' in. This simple remedy will not cure entirely, but will save lots o' hurtin'. Thare's hundreds of remedies but no perfect cure—except amputashun; and if that is too much fer you, wy, you had better make up your mind to grin and bear it; fer whenever a bee socks his stinger into a feller's nerve, thare is bound to be sum komplainin'. ELLERY KRUM.

BAY-BLOSSOMS.

There is now on the table where I am writing, a bouquet of bay and magnolia blossoms. The great white flowers of the magnolia are a surprise and delight to one who has always lived at the North. The large germ and stamens are inclosed with three white petals, and the specimen before me measures four inches in length by three in width. These three inner petals are surrounded by six larger ones, which measure six inches in length by four in width. The leaves of the magnolia are thick and leathery, and, like all the leaves of this locality, varnished a bright green. There were three large insects in the bloom; and will some of the bee-keepers who live where magnolias are abundant tell us whether they are rich in honey?

The bay-bloom belongs to the same family as the magnolia, but is smaller, and admired more by some persons than the magnolia. The germ resembles the magnolia, and is surrounded by eight white petals measuring two inches in length and one in width. The three calyxes are white, 1⅛ inches in length and ¾ in width, and turn back upon the stem, adding to its beauty. Its lovely green leaves are smooth and glossy. MRS. L. HARRISON.

St. Andrews Bay, Florida, May 1.

SEALED COVERS A GREAT SUCCESS; CAUSE OF SPRING DWINDLING.

As you have solicited a report from your subscribers as to their success in wintering bees under sealed covers, I will give my experience for the past ten years. My bees are wintered on their summer stands, packed in outer cases with planer shavings. The cases are of a size to leave a space of four inches all around the sides and bottom, and from 6 to 8 inches on top. When the covers are less than ⅞ in. thick I use there or four thicknesses of newspapers under the packing; and when the covers had been loosened so late that the bees could not reseal them they were screwed down, and the cracks sealed with a thick flour paste, and the entrances left the full width. My losses for the last ten years have not exceeded two per cent.

The past winter has been very severe in this section, confining the bees to their hives for over three months without a flight. Out of 75 colonies I packed as above described, I lost 3; one starved to death; one lost its queen, and the bees left the hive full of honey, while the entrance of the other became clogged with dead bees, and they smothered; consequently their loss can not be attributed to the manner of wintering.

I noticed that but very few, who have described their manner of packing in outside cases, seem to think it necessary to put any thing under the bottom-board. It seems to me that it is just as essential to keep the cold air from the bottom-board as it is from our sitting-room floor.

Now a word as to spring dwindling. My experience has been, that colonies that go into winter quarters with few bees and insufficient stores, and of poor quality, are the ones that are troubled with "spring dwindling;" while those that start in with plenty of bees and sealed honey are nearly always ready for business when spring opens. P. L. NORTON.

Lanesboro, Pa., Apr. 24.

SEALED COVERS VS. QUILTS; VALUABLE TESTIMONY.

Ernest:—Those sealed covers that you have been experimenting with are all right sometimes and sometimes they are all wrong—like a balky horse that will pull when every thing is favorable, but when the hill is too long and rough he will stop before he gets to the top of the hill. But quilts or cushions that will let the moisture pass up are like the true horse that will pull when the other horse won't. I have wintered bees for 20 years both ways, part with sealed covers and part with quilts only. But I winter in cellars, and I find that, in some of my cellars, bees will winter just as well under sealed covers as under quilts, and in other cellars they will not winter well unless under quilts. But my bees will winter well in all of my cellars with the quilts, so I am in favor of quilts for cellar wintering, and I think the same will prove true in outdoor wintering, unless it is in a warmer climate than it is here in Central New York.

Middleburgh, N, Y. N. D. WEST.

[It is somewhat of a nuisance to pull off the bottom-boards of hives; and if the absorbing cushion on top of the hive will work as well as sealed-covered hives with no bottom-boards in the cellar, we shall like it. In practice we prefer most of our hive bottoms permanently fastened.]

SEALED COVERS AND ABSORBENTS; THE DIFFERENT PACKING MATERIAL CONSIDERED.

My strongest colonies went through the winter with sealed covers, with the seal broken in mid-winter. I can see no difference between chaff cushions, as usually applied, and sealed covers, outside case with two inches all around, and 4 to 8 inches on top, with dry sawdust or chaff. Mineral wool is the best, for packing outside cases, that I know, and it is cheap enough ($1.25 per 100 lbs.).

I tried one strong colony with cork packing and 6-inch cushion (cork) on top. It strikes me as being too porous; in fact, this proved to be so porous that all that I found in the spring (March 8th) was pores. Bees dead? do you say? I should remark! Chaff cushions are good; sealed covers with lots of sawdust, chaff, excelsior, or mineral wool, on top and around, *kept dry*, are also good, providing you have vigorous queens. D. LINDBECK.

Bishop Hill, Ill., April 15.

[Mineral wool at $1.25 per 100 lbs. is rather expensive—too much so for the average bee-keeper; so also is ground cork.]

STINGS AND RHEUMATISM.

There seems to be a growing conviction that bee-stings are good for rheumatism. My experience seems to point in that direction. For a great many years I had been subject to muscular rheumatism in my back and shoulders; and at times it would get into my arms till I felt as if I had the toothache all through the muscles of those limbs. Two years ago I purchased a dozen colonies of bees. They were in different styles of hives, some with movable frames and some without. I was told that they had not been opened for three years. At first they were inclined to resent the presence of a person in the apiary as an unwarranted intrusion. In transferring and manipulating them, of course I received plenty of stings. In a short time I noticed that my rheumatism was gone, and so far it has not returned. L. J. TEMPLIN.

Canon City, Col.

Reading of "pollen plenty," "balmy April weather," and "lots of bees hatching," in last GLEANINGS, makes me almost homesick, for my bees are still in the cellar, while rain, snow, and high winds have been the order of things the most of the time in this locality, so far, during 1893. Neither soft maple nor elm is in blossom yet, while I see by Dr. Miller's "Straws," the same opened with him April first. The bees have been in the cellar 167 days, and seem quiet and nice, although the waste on the cellar-bottom has been great for the past three weeks.

G. M. DOOLITTLE.

Borodino, N. Y., April 26.

A CORRECTION.

I notice a slight error in my article in April 1st GLEANINGS, in which you have the name of Henry Alley instead of Henry Utley in several places. C. H. DIBBERN.

Milan, Ill., April 29.

[By referring to the original manuscript we see that friend Dibbern wrote "Halley" as plainly as pen can make it, and our proof-reader supposed it was meant for our "old reliable" friend H. Alley. This shows that too much pains can not be taken in writing names. We hope the above will make matters right.]

Why not make the top-bars of brood-frames wide enough to be queen-excluding, and thus do away with the metallic queen-excluder?

Pee Dee, N. C., April 12. A. A. COX.

[This has been suggested before, but it is not practicable.]

If Doolittle (page 296) will take a fine saw and cut kerfs half way through the board on which he cuts foundation, he will not need any gauge-boards, and will find that it will cut much better. The nearer the handle of the knife is held down to the board, the better it will work.

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ANSWERS TO QUESTIONS

FROM BEGINNERS.

W. E. D., of West Virginia, asks whether we use chaff hives summer and winter. *Answer.*—We do; but at the approach of warm weather we remove the chaff cushions—otherwise the colonies are protected the same as in winter.

W. C. F., of Virginia, says he has five strong colonies, one of which is pure Italians and one common black bees, and he asks how he can Italianize the blacks. *Answer.*—We would recommend the plan given in our answer to T. T. F., Tennessee, below.

O. H., of Illinois, asks whether, when putting foundation into brood-frames, the same should touch the bottom-bar. *Answer.*—Except for perpendicular wiring there should be a quarter-inch space between the bottom edge of the foundation and the bottom-bar. The foundation sags a little when the bees draw it out, and a little allowance should be made.

H. C. C., having read our article on transferring, in our catalogue, wants to know when transferring should be done. *Answer.*—Preferably in the spring, when bees are getting a little honey from some source; and when, too, there is very little honey in the combs. However, we transfer any time during the season. Mr. Heddon's short method is the one we prefer.

G. R. W., of Indiana, wants to know what to do with the queens of after-swarms that are returned to the parent colony. *Answer.*—As a general thing there will be queens in the apiary that are either pretty old or else not very

prolific—or, what is more likely to be the case queens whose bees are poorly marked. These queens can be removed, and selected queens from the after-swarms introduced in their place. In this way the apiary can be requeened very cheaply.

T. T. F., of Tennessee, asks how to have a queen fertilized by select drones. *Answer.*—The only way is to place perforated zinc over the entrances of the colonies having undesirable drones. For this purpose, drone-guards or Alley traps may be used. Drone comb should be given, and stimulative feeding should be practiced on the colony or colonies having select drones. Unless such bees are fed daily a small amount of sugar syrup when honey is not coming in, they will be liable to kill off the drones, or refuse altogether to rear them. The conditions of an ordinary honey-flow should be brought to bear upon the colony as nearly as possible.

F. W., of Connecticut, says he has three colonies of bees in Dovetailed hives, and wants to know how he shall manage them to obtain the most comb honey. *Answer.*—This question requires too long an answer to be given here in detail; but in a general way we may say that early brood-rearing should be encouraged so that there may be a large force of bees a couple of weeks old when the honey season opens up. To procure either comb or extracted honey, this is the most important factor to be considered. A large force of bees of the right age, and a reasonable honey-flow, means honey. A small force of bees, or even a large force too young, means a practical failure so far as the production of honey is concerned. But our querist may ask how to start early brood-rearing. As soon as the weather opens up warm, feed the bees daily about half a pint of sugar syrup. It is assumed that the colonies have been carefully packed in double-walled hives, otherwise there will be times when the brood will be chilled from this early stimulative feeding.

MY VISIT TO T. B. TERRY'S.

THE REST OF THE VISIT.

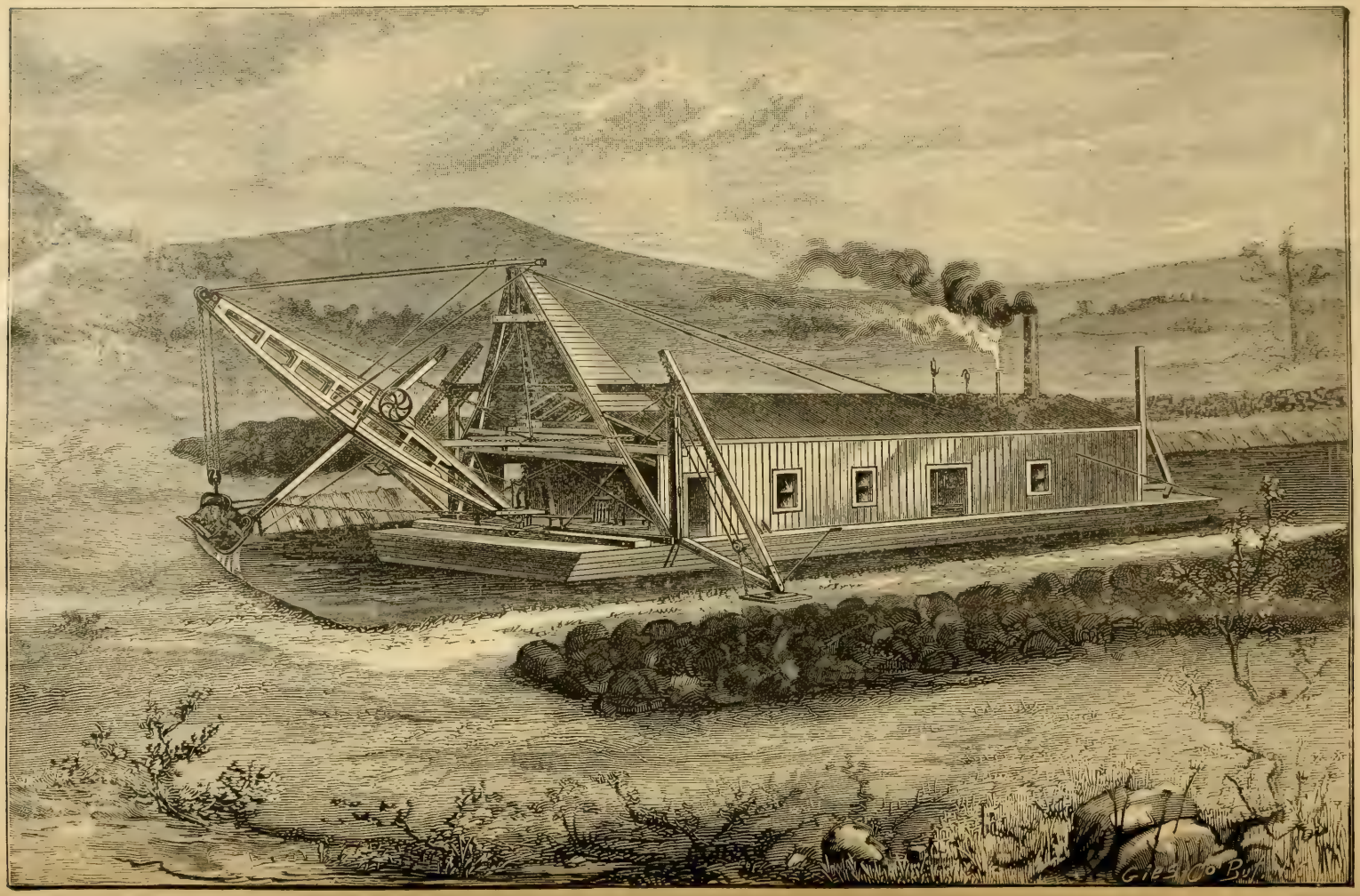
After my mention of the ditching-dredge, in our last issue, the manufacturers were kind enough to send me an electrotype of it. But I do not like the electrotype of it as well as I did the machine itself. In the first place, it is not tearing through a swamp. Secondly, that great walking-beam, as I call it, is out of all proportion. It should be nearly as long as the whole boat, and then that scoop is insignificant. Why, the one I saw would hold a whole family, providing there were not too many of them. The steel horns in front, you will notice, tear up the soil, and then when it is swung around over the dry land, or over the bank, the operator, by moving a lever, drops the bottom out. The arm, or handle, attached to this scoop, runs in grooves so it can be drawn back or let out, while the great walking-beam can be raised up at any angle, or swung either to the right or to the left till it brings the digger in such a shape that the man on the platform handles the whole as he would a spade or fork.

Now for the outdoors.

One marked feature of friend Terry's premises is the fact that there is no rubbish around the barn or around the house. There is not an old wagon, not a hay-rack nor a corn-crib, chicken-coop, pig-sty, nor any thing of the sort. There is not any muddy barnyard, because the barnyard is covered up under a roof; and while, at the same time, it is dry and pleasant to walk around in, it is almost as airy and light as all outdoors. Again, there is not any woodpile, no ash-leach, no dead trees, no sticks of timber, no old rails; in fact, there are not any piles of lumber, old or new. The premises are as clean and tidy as any city residence. While I enjoyed the effect, I do not know but a small-sized groan escaped me, and I came pretty near saying to myself, "Oh dear me! if Mr. Terry *had* to have this, that, and the other around his home, that I have to have, he would find it a hard matter," etc. I made up my mind that I was going to find out about the woodpile, bits of odd lumber, etc., for a very pretty new fence had just been built between his land and his neighbor's. I felt pretty sure there were some posts left—may be some boards. Of course, the wood was in the wood-shed, as every farmer's wood should be. But while we were looking over the farm, away off on the back side, over the hill, where it could not be seen from the street, was a sort of lumber-yard. There were the extra fence-posts, and the firewood that could not be put into the wood-shed, probably because there was not room for it, and certain odds and ends that would accumulate, and which were too valuable to throw away. Friend T. had gone to the trouble and expense of hauling this away off out of sight, or very likely it was taken out of sight in the first place. In fact, a good deal of it was just as convenient to get at *there* as anywhere else. Now, not all of us, perhaps, can do as much as he has done in this direction. He is a great teacher, and he ought to have a model place for the rest of us to look at. But we certainly can get rid of a great part of the rubbish that mars and deforms the prospect around our homes. This is nothing new to me. I have been at work at it for years. Below is what I had printed on some cards and scattered all over our establishment, and gave all our people an exhortation on this subject.

GET RID OF RUBBISH, AND SLICK UP.

If you want to help me, friends, just lend a hand while we get rid of all useless stuff that encumbers our various buildings, rooms, and counters. Let us get rid of every empty barrel (be sure to preserve the head along with it), empty box or basket that is not used or wanted; all unsalable goods; tools that happen to be left in your room that are not used; old iron; old lumber; discarded rubbish of all sorts. Take the barrels and boxes to the box-house; and, by the way, wherever you find a barrel in your room that is less than half full, put its contents into a basket of proper size, and get rid of the box or barrel. This will give us more room, and it will also enable the packers to have more boxes and barrels without buying them. Be very particular about letting tools that are not yours, and which you do not use, remain in your room. A while ago our men were hunting all over the farm for our four shovels. I found one of them in the express room. The expressman said it had been there for a long time; and he said he did not know whose it was, not where it belonged. Now, please let us avoid this state of affairs. If you do not know where a thing belongs, bring it to me, or call my attention to it. If there are any tools or machinery in regard to which you are undecided as to whether they will be used again or not, call my attention to it, and I will decide where it belongs. And, please, do not leave any old coats, shoes, rubbers, umbrellas, etc., here on our premises. I give you fair warning, that I am commencing my "spring clarin' up," even now, this second day of January, 1893; and if you do not take care of your property forthwith, it may turn up missing before you know it. Let us all get at it and turn all these accumulations, that are doing no good, into the hard cash that you and I both stand in need of. Things that won't sell for cash at all—not even for kindling-wood—let us get out of sight, and have our premises present a better appearance when our spring visitors come to see us. If it will pay to have a broken thing *mended*, the very best time to mend it is when it is *first broken*. You know, "Order is heaven's first law."

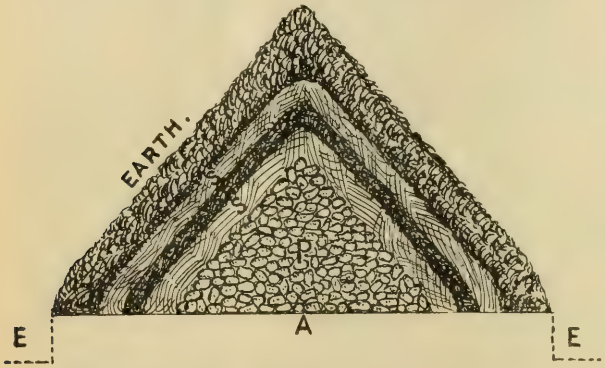


DITCHING-DREDGE, MANUFACTURED BY THE MARION STEEL-SHOVEL CO., MARION, O.

Let us now turn in all together and fight against the sin of *dis*order. A. I. ROOT.

Several times of late I have been wondering what a farmer or anybody else ought to do with discarded machinery. A few days ago I saw an article in the *Ohio Farmer* on this very subject. By the way, if you live in Ohio you certainly ought to take the *Ohio Farmer;* and I do think it would be a pretty good idea to take it, even if you do *not* live in Ohio. Old machinery should be put away under shelter, because it frequently furnishes us material for something that would otherwise cost a good deal of money. A writer in the *Ohio Farmer* told how he made a lot of things out of an old mowing-machine.

Friend Terry's tool-house, especially the upstairs part of it, did not look quite as tidy as every thing does outdoors. In fact, I do not know that there is any special need of keeping things just so in a loft in the tool-house. When the weather is good it would not pay to stop too long to put things to rights. Let it be until we have a real bad stormy day, and then fix it up. By the way, Mrs. Root has a short cut for making things look tidy when she has not got ready to make them so. May be she will scold if I tell it, but I will take the chances. Well, when I want to hunt over the pockets of my old clothing, for missing things, and I sometimes remonstrate because I find said room "as dark as a pocket." Her excuse is, that she had not yet had time to slick it up, and so she closed the blinds to prevent anybody from seeing the disorder. It is a quick way of tidying a room up—make it dark.



THE WAY TERRY BURIES HIS SEED POTATOES.

Cross-section of my seed-potato pile when finished for winter. P, potatoes; S, S, straw; E, E, where we took earth for covering; A, surface of ground.

I need not tell you that nothing on friend Terry's whole farm suffers from being out in the weather. All buildings, and finished woodwork that must be kept outdoors, are kept constantly painted. I thought I had got him once, for there was a stack of straw right out in the weather, in the middle of the field. How do you think it turned out? Why, it was a heap of buried potatoes. He buries his potatoes out in the lot, just as the ground begins to freeze so as to make a crust. He puts on some straw, and then a little dirt, and lets this dirt freeze hard. Of course, the outside covering is straw, to keep the sun from the frozen earth. Along in May, the first covering of the earth may get thawed through; but with the second, as he has it fixed, I have no doubt it could easily be kept frozen solid until June. The consequence is, he has a cold-storage pit just as good as or better than any of the high-priced patent ones. Above is a picture of it. The potatoes are incased in frozen earth, from the time he puts them up until they are planted. In fact, we put our hands down through the straw and felt the frozen earth when I was there. His strawberries were not yet uncovered. I told him mine had wintered so well under the snow that I hardly thought his could be better; but when I uncovered a row or two I had to give up. They had commenced to grow under the straw. The mulch was just enough to protect from alternate freezing and thawing, and yet if you look carefully you could now and then catch a glimpse of the green leaves down through the straw. Another thing, the plants were very nicely thinned out. The matted rows were all covered, and yet in no place were the plants nearer than six or seven inches. I asked what they did with the surplus, and Robert showed me a great pile of dried-up plants up against the fence. If one were selling plants, these might have been planted out, and would doubtless have been worth considerable. But friend Terry does not believe in dabbling in every thing. He could never get his work done, and take things easy if he did so. His clover-fields are just like the strawberries. There was an even, heavy growth all over all his fields. There were no bare spots, and hardly any rank spots. Then there was a beautiful soft rich mulch all over the ground. Why, it almost seemed like woods dirt down between the clover-plants. This is a part of his plan—mowing off the tops of the clover, and weeds (if there were any), and letting them drop down, besides using the straw as a mulch over the wheat to some extent.

While down near the road I happened to look toward that strip of new fence. It was oak posts and oak boards—good sound oak too. Terry thinks such a fence suits him better, and costs him less, all things considered, than wire or hedge, or any thing else. I expressed some surprise that he had got it so perfectly straight. He remarked that it was Robert's work, and that it was the first piece of fence of that kind that the boy had ever built. He told his father he feared he should not do it as it ought to be; but his father showed him how to set the stakes, and line them exactly, before he commenced setting the fence-posts; and by taking a little pains the boy ran the fence right over quite a hill, and still made it as straight as a string.

We wanted to get into the barn, but it was locked. My friend, did you ever find a barn-door locked, and the key carried off so you could not get in when you wanted to? Friend Terry keeps his buildings locked, but he does not have any *keys* to bother with. A combination lock, made on purpose for barndoors, and something that costs less than a dollar, is what he uses. The door was opened quicker than you could take a key out of your pocket, and all the family knew the combination. A stranger would find it harder to get the door open than with almost any padlock made. These locks are made by the Miller Lock Co., Kent, O. I told Mr. Calvert that we certainly must have some, and offer them for sale. Perhaps we may have a notice of them in this number. If you say I am advertising things in the reading-columns, I reply that there are certain things that *ought* to be advertised in the reading-columns, and this is one of the things.

OURSELVES AND OUR NEIGHBORS.

Where shall wisdom be found?—JOB 28:12.

I hope our readers are familiar with the last half of the 28th chapter of Job. I thought I was familiar with it; in fact, it used to be in one of our old readers; and I can remember of the big scholars reading it in school before I was old enough to be able to read it myself. But some way or other it needed—at least for myself—about fifty years of *experience* in human life before I was prepared to comprehend this talk about wisdom. Let us take a verse at a time. "But where shall wisdom be found? and where is the place of understanding?" that is, where are we going to get wisdom? We begin to comprehend the value of wisdom when we have had only a very little experience in this world. A baby creeps up to the stove and puts out its hand. Mamma says, "Burny, burn!" The tones of her voice and the look of alarm in her face tell the young aspirant for wisdom of the danger. He opens his cunning little mouth, and with his blue eyes gazes into the maternal face. He looks at the stove, and then looks at his dimpled, uplifted hand. If he has the average spirit of Young America, in his desire to investigate these strange things that are coming up all around him he often touches the stove *just a little* to see what dire consequences will follow. By and by he learns, perhaps through the medium of a sore finger, that the fire is an excellent thing to warm up the pink toes, but that it is a dangerous thing when either toes or fingers get too much of it.

"Man knoweth not the price thereof; neither is it found in the land of the living." We can not *buy* wisdom with gold. It can be gotten only by *experience*. Books are a great help toward wisdom; but a man who reads his books, and does not put his knowledge into practice, is the laughing-stock of humanity. In the same way, *character* can not be bought with money. Some of our millionaires have tried it. The world is almost as ready to laugh at a millionaire who imagines his *gold* is going to make character when his acts are selfish, low, and bad, as the man who thinks books may answer without experience.

"The depth saith, It is not in me; and the sea saith, It is not with me. It can not be gotten for gold, neither shall silver be weighed for the price thereof. It can not be valued with the gold of Ophir, with the precious onyx, nor the sapphire." The sacred writer, in this beautiful oriental language, emphasizes the fact that wisdom is better worth our labor and pains than all the precious things that are valued by kings and princes. He goes on: "The gold and the crystal can not equal it; and the exchange of it shall not be for jewels of fine gold. No mention shall be made of coral or pearls, for the price of wisdom is above rubies. The topaz of Ethiopia shall not equal it, nor shall it be valued with pure gold."

After the above enumeration the writer comes back to a parallel question to the one in which our text is found; namely, "*Whence*, then, cometh wisdom? and where is the place of understanding?" People long to be wise; in fact, a great many of us take a good deal of pains to make it appear that we are wise. Once in a while somebody makes himself ridiculous—at least to a few who happen to know—by assuming that he knows what he does not know. The most of us have seen people undertake to teach bee culture when they did not know, or had reason to suppose, there was no bee-keeper around. Some of our great professors have made blunders in this very line—even Agassiz and Tyndall.

I have mentioned to you that, in my early days, electricity was a great hobby of mine. At a time when I was pretty well posted in the science as far as it had made progress, a physician who stood well in our town was summoned to try to bring a child to life that had got hold of a cup of whisky and drank enough to kill it. Somebody suggested that electricity might bring about animation. A crowd of townspeople were very curious about the strange little instrument that made such a buzzing. Now, although the doctor failed in bringing the child to life, he thought that, notwithstanding, the occasion and the crowd would afford him an excellent opportunity for airing his wisdom. He attempted to give a full explanation to the crowd in regard to the coils of wire and the battery attached. Batteries and coils were at that time my daily companions; and as my apparatus was all home-made—in fact, the work of my own boyish hands—I knew a good deal more about it than the doctor did; but his talk on that occasion not only gave me a disgust for that particular doctor, but it came pretty near disgusting me with doctors as a whole. If that man knew as little of the human body as he did of the apparatus before us—a machine that was the work of human hands—how should he be able to help anybody in *any* emergency? No doubt he wanted wisdom; but he did not want it bad enough to make honest explorations in the science before he attempted to teach others.

"Whence, then, cometh wisdom, and where is the place of understanding?" At one period of my life I was for some time somewhat skeptical in regard to Bible teachings. As it began to be known, I was thrown more or less into the companionship of those who openly questioned the existence of God. These people admitted that there were a good many things to be learned in this world of ours; there were hidden mysteries on every hand; and although human intelligence had gone a great way, and had accomplished a great deal, yet these very people were (if they were bright enough) forced to admit that there were unexplored mysteries in every direction. In fact, these people caught a *glimpse* of the fact that what man *does* know is but very little indeed compared with what he does *not* know and may never find out at all. Then comes the question, "If *humanity* does not know, and is perhaps incapable of knowing, *who* does? Who is there, and where is he, this wonderful intelligence that looks on it all and knows it all?" "Where is the place of understanding? seeing it is hidden from the eyes of all living, and kept close from the fowls of the air." Here, again, is a mystery. The fowls of the air know a good many things that we know nothing about at all. A few days ago as I stood in the street, some strange familiar sounds struck my ear. For a while I tried to imagine where it was or when it was that I had heard those strange sounds before. Other people were listening. The sounds came from the heavens above. By the time I had turned my eyes upward the people began to call from one to another, "The wild geese! see the wild geese!" A great flock of them were stretched out like a letter A; and as they moved leisurely through the heavens, away up high in the air, they seemed to be talking to each other on the way. What were they saying? All the sages in the world can not answer. Where were they going? They were going north, because it was springtime; but we do not know just where, and we can not tell where they got their intelligence that it was safe for them to once more seek their northern home. The strange sounds that revived forgotten memories made me think of

the thousands of geese away up in Puget Sound when I had that pleasant visit with friend March.

Now, then, what sort of *wisdom* is it that says *there is no God*—there is no intelligence in the universe that knows things we haven't learned, and may never learn? Verily, the *fool* saith in his heart, "There is no God."

"Destruction and death say, We have heard the fame thereof with our ears." We look into the faces of our friends when on the death-bed, and we wonder whether or not they could tell us, if they had voice and strength, of the hidden mysteries of the world beyond. Sometimes through their looks we seem to catch a glimpse of the glories beyond; but it is only a glimpse.

"God understandeth the way thereof, and he knoweth the place thereof." It would be a little sad if we were placed here in this world of ours just long enough to comprehend how much there is we do not know, and never can know, to think that there is not an overruling power who knows. The Bible tells us that God understandeth the way. Furthermore, "For he looketh to the ends of the earth, and seeth under the whole heaven; to make the weight for the winds, and he weigheth the waters by measure." Nothing is hidden from him. "Even the winds and the waves obey him." God not only knows, but he fashioned the whole universe, and it is always subject to his bidding. He can at any moment say to any of the elements, "Peace, be still." "When he made a decree for the rain, and a way for the lightning of the thunder, then did he see it and declare it; he prepared it, yea, and searched it out." The above answers some of the questions propounded at the head of our talk—"Where shall wisdom be found?" but yet the conclusion forces itself irresistibly upon us, that the sacred writer has not yet finished. In all his talk he has been approaching a climax. When he says that "God understandeth the way," it satisfies just a little what the listener might have been expecting; but it is not the capstone of the whole of it. "Where shall wisdom be found?" If gold can not purchase it; if neither the depths of the sea nor the heavens themselves can give us the secret, where then shall it be found? Is it any use for us to long for and hope for and labor for wisdom! Yes, indeed it is. The final ending of this beautiful chapter caps the climax; and every time I read it over of late, it seems to me as though it is inspiration from on high. The author of that chapter certainly must have had hold on God himself, or else he never could have framed the concluding verse. See if you do not agree with me as we read it together:

"*And unto man he said, The fear of the Lord, that is wisdom; and to depart from evil is understanding.*"

In olden times, and even at the present time, some would be sages and scientists seem to imagine that a man can be very *wise* and at the same time very *wicked;* and I have sometimes thought there were men who stood high on account of their skill—say skill in medicine, for instance—men who thought that, because they were skillful and learned, and had a great name, that they were excusable for being wicked. In other words, that it was not as bad for *them* to indulge their intemperate or licentious habits as it was for somebody who did not know so much. God forbid! "The *fear* of the *Lord*, that is wisdom." Any kind of wisdom that is not coupled with the fear of God is a poor, miserable, silly thing; and any sort of wisdom that would teach us that, because we are wise, there is *less* need of departing from our evil ways, is ridiculous. Shame upon the man who thinks that, because he is educated in books, or among men, that he has any better right to persist in his evil habits. If the present age has not emphatically set its foot down on this sort of philosophy, may God help us to do it speedily.

Now, I am not going to bring the moral of this beautiful chapter to bear only on those who are committing crime. None of us can aspire to true wisdom unless we are careful. We must be *exceedingly* careful if we would be wise. Some of us are in the habit of doing things under a sudden impulse, and then feeling sorry for it afterward. Well, it is a thousand times better to *feel sorry* than to go on wronging people right and left, and not caring any thing about it; but it would be a great deal better still to listen to the voice of wisdom, and thus avoid being *obliged* to feel sorry. Again, some of us can not have any peace of mind unless we apologize for the hasty words we have been heedless enough to let slip. It is right to apologize—in fact, it is an indication of a tender conscience when we can not have peace or rest until we have tried to recall the unwise speech or act. But what do you think about a friend who is wounding you, and then making apologies right straight along? You may think he means well; but in a little while you begin to pity him, and after a while nobody knows exactly when he is himself and when he is *not* quite himself. Imagine how a man's helpers must feel when he comes around and makes a stir about something that is not just according to his notion; and suppose they say to themselves, "Well, now, I wonder whether the boss really *means* what he says, or is he a little off his base just now, and will come around after a little while and apologize for being hasty." The question comes up, "Had we better keep right on as we have been doing, or does he really mean what he said, and is he really going to stick to it?" Why, the employer who lets his feelings and temporary impulses thus run away with him is certainly not wise, and he is hardly fit to be intrusted with help. His changeable moods will not only ruin his business, but they will spoil his reputation in any community.

A few weeks ago I undertook to reprove a hand who needed reproving. I foolishly said too much, and was too severe. I could not rest until I had made him some sort of apology. I knew from experience that, if I were not careful, I should *apologize* too much, and thus make matters just as bad as or worse than if I had not undertaken to straighten the matter in the first place. For several days afterward I kept thinking how unwise it was to let my feelings or impulses run away with my better judgment—or, if you choose, run away with *wisdom*, or crowd *wisdom* out and make her take a back seat. Yesterday the ground finally became fit to work. It had not rained for as much as four days. Planting was away behind; the horses and the men and boys were all out in the lot. The barometer said it was going to rain, and the Weather Bureau had sent us a telegram saying there would be rain before night. The seeds, with the stakes properly labeled, were out in the lot, and we were waiting for one of the boys to fetch the seed-drill. He came back, saying that a neighbor had borrowed it about two weeks before, and had not brought it back. I remembered then that said neighbor promised to bring it back in a couple of hours, or before night, or something of that sort. I told him, when he wanted it to plant his onion seed, how I had been annoyed by lending that special seed-drill; but he was so sure he would bring it back before I could possibly want it, that I gave way in order to be accommodating. He told the boy he would go right after the drill; but it was several miles away, and therefore we must drop our seeds by hand, or run the risk of being stopped again by another rain. If you have ever

been in such a predicament yourself, you can imagine how provoked I felt. Once more I made huge resolutions that I would stop lending my tools; but I did not say any thing *out loud* to anybody. The neighbor came up in the field to apologize; but remembering my experience of but a few days before, I resolved that wisdom *should* keep her seat, or, in other words, that *this* time I would be sure not to say any thing that I should regret afterward. Lest I lay too much blame on my neighbor, let me explain that the extremely wet weather probably hindered *him* from getting in his seeds; and he knew, too, that I could not use the drill, for my land was even worse than his on account of the wetness; and as it kept raining he finally forgot about it when the weather did turn around so we could get on our ground.

As I knelt down by my bedside that night, I thanked God for his many mercies of the day. I thanked him *especially* that he had kept me from saying any thing the memory of which would give me pain and keep me awake. As I prepared to lay my head upon my pillow, after the severe work and many cares of the day, I thought, "Oh what a thing is wisdom!" Dear reader, is it not true that it is worth a thousand times more than silver or gold? The feeling that, when you go to sleep at night, you have not wronged any one during the day, and have not dishonored the sacred name of Christ Jesus, whom you profess to follow, is worth more than any thing else that this world has to offer. "Behold, the fear of the Lord, that is wisdom; and to depart from evil is understanding."

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

CHEMICAL FERTILIZERS—DO THEY PAY?

See here, Mr. Root; do you mean to say that all who are using commercial fertilizers are throwing money away, and don't know what they are doing, or are interested in the sale of them? Do you believe that Joseph Harris' recommendation of nitrate of soda was all a selfish one? Is the *Rural New-Yorker* wrong, and teaching what is costing the farmers of the country millions every year? If these things are so, we want to know it. Now, Mr. Root, just read "Chemicals and Clover," Vols. 1 and 2, and then say if you think all these successful farmers are putting tons of fertilizers and thousands of dollars in the ground for nothing.

Did Hale Bros., of Connecticut peach fame, throw their money away when they raised $25,000 worth of peaches on bone and potash, where no peaches had been raised before? How about Tankage goes up head in the *Rural* of April 8? How is it that many farmers are raising much larger crops of potatoes on fertilizers than Terry is, if his land is already so rich that fertilizer does no good? There must be some other reason besides too rich land. Your soil is doubtless full of nitrogen, from the large doses of barnyard manure you have been using. I find on some soils phosphoric acid is all that is needed; on others, it is potash. I cleared new land last year, and put manure in the hill for corn, with ashes, hen manure, and phosphoric acid; left some rows with no manure; the manured was 50 per cent better than not manured, and the phosphate alone was just as good as where I used ashes and hen manure. On potatoes, nitrate of soda did no good; but cotton-seed meal increased the crop largely—at least a half more than no manure; also more than a $27.00 complete fertilizer. This was on fairly good land, manured broadcast with cow manure. Fertilizer has always paid me when used with judgment. I think in time Terry will find his land growing poor in potash and phosphate.

Grand View, Tenn. A. F. AMES.

[My good friend, such letters as yours are exactly what I want to get; and I have been surprised that I did not get more of them. Yes, I know all the facts that you quote. I have read all about them in the *Rural*, and in "Chemicals and Clover," and in other books—the very things you mention. I have written to the Mapes people, and they have promised to help me out. A bag of the mixture they sent me operates a good deal as guano did; and it costs just as much as guano. I think that, on the whole, however, I should prefer the guano. Now, what gain have we made? This fertilizer costs $41.00 a ton. In view of the facility with which it may be applied, it may pay on some crops. J. M. Smith, of Green Bay, Wis., says, quoting Mr. Terry's own words from our forthcoming potato-book:

"Fertilizers have never paid me on good or poor land."

You yourself acknowledge that nitrate of soda did no good. Our experiment station says it does no good at all on many crops; and I do not believe they have succeeded in making it pay on *any* crop. I want to see some reports from those who have fertilized, say three rows, and then skipped three rows, and so on through the field. I have done it here in our market-garden repeatedly, with the results I have given you. If I had put it on a whole piece, and then given the fertilizer the credit because the crop was a good one, I might have had many encouraging results. I have had a long talk with friend Terry on this very subject, and he is just as anxious as I am to see it demonstrated that chemical fertilizers are at present cheaper than stable manure, or, if you choose, cheaper than clover. Here is something from another friend:]

800,000 TONS OF NITRATE OF SODA IN A YEAR.

Mr. Root:—I have noticed what you say from time to time of farm chemicals, especially nitrate of soda. If English farmers use 800,000 tons per year, there are surely some places in America where it will pay. WM. H. ALLEN.

Monroe, Mass., May 3.

[Friend A., it would surely seem that nitrate of soda must be a profitable fertilizer, if there is no mistake in the figures you give us; and substantially the same are given in a little book by Joseph Harris. Within an hour I have been applying Mapes potato-manure to two plots of potatoes—one Early Ohio and the other Early Puritan. I instructed my man very plainly that I wanted him to use the potato-fertilizer on only a part of each piece; and I set the grain-drill so the fertilizer would run out when he was about half through. I felt a little anxious, however, and so got around just as he was finishing the piece. He had moved the lever so as to make it feed slower, saying he was afraid there would not be enough to go over *all* the potatoes, if he left it where I placed it. And this is not the first time that I have had just this sort of work. People the world over seem determined to avoid any sort of accurate test. They will scatter their fertilizer over the whole of their land, and then if they get a good crop they will give the fertilizer the credit. The work of the experiment stations brings out the truth sharp and clear, like a beaconlight; and when they are ready to advise the use of chemical fertilizers in the way Joseph Harris and the *Rural New-Yorker* have done, then friend Terry and I will be satisfied that there has not been a blunder made somewhere.]

THE ST. MARTIN RHUBARB.

Mrs. Root fears I gave almost too strong a recommend in our issue of April 15; and to make another test she made two pies—one of the common rhubarb, and one of the St. Martin. The latter was a good deal the better pie of the two, just as I expected it would be. But she explains it in this way: She says that, although she tried hard to make them just alike, she thinks she must have got more sugar in the St. Martin pie; and as the other one did not have sugar enough, it gave the St. M. the advantage. Again, the pie made of the common variety was not only sour, but the juice ran out all over every thing. I urged again that here was where the St. Martin was ahead; but she says she thinks she sprinkled more flour in the St. Martin, so that it took up the juice. Of course, she did not *mean* to do so, but it might have happened that way. This illustrates how difficult it is to decide just what gave the improvement in a pie or in a crop. It takes repeated tests to settle almost any fact decisively. Perhaps I am a little inclined to be in haste to decide that a new variety is an improvement. If so, Mrs. Root is just enough the other way, and this makes us average just about right. By the way, what a grand institution the marriage relation is, any way! But we are talking about pies just now. Our cook at the factory is going to make another test to-day, and then we shall know better. I have pulled the stalks from each, and have eaten them raw; and, to tell the truth, I can not see very much difference. But another factor comes in right here: Different plants of rhubarb of the same variety, and in the same field, show that some are more acid, or tart, than others. Somebody has asked the question whether we could preserve a distinct variety by sowing the seed any way. Won't some of our experiment stations tell us something about it? I once thought I could distinguish St. Martin by the brighter and more vivid red of the stalks; but come to go over our plantation of the common kind, I find there are occasional plants with just as vivid a red as the St. Martin. By the way, does not this whole matter point out a moral? The seedsman who issues a catalogue should be exceedingly careful indeed about saying a variety is an improvement. The St. Martin has not yet gone into our catalogue, and *may be* it never will. A good many seedsmen advertise a new variety, and copy what the originator has said. I protest against this. The seedsman who issues a catalogue ought to have enterprise enough to give any new variety a good test in his experiment grounds before he booms it or undertakes to push it off on his customers. Just open your seed catalogues and see how many seedsmen there are who will tell you of a new variety, "We have grown this new thing side by side with our best old varieties, and it certainly has advantages as follows," etc. I am afraid a great part of our seedsmen have too much "*business*" on hand to go out into the garden and look after the rhubarb, and have pies made from both kinds, etc.

After dinner.—The St. Martin is certainly ahead in three respects. It has less juice, and is, therefore, not so liable to run over in the oven or after the pie is cut; it is much sweeter, and therefore takes less sugar, and it also has more of a distinct berry flavor than the old varieties.

LAKE-SHORE SAND AS A MULCH.

I am better and better pleased with this every day. We are having dry weather now; and in order to push the cabbage-plants, frequent watering is desirable. It is also desirable to water the beds every time we take up plants to fill an order. Well, we have always had more or less trouble on account of the baking of the surface of our clay soil, after this repeated watering—especially when the boys got on a little too much water. At times, in fact, our plant-beds would crack open so that one could put his finger down an inch or more—that is, where watering had been badly neglected. Well, the sand works this way: We sift our dirt until it is not only fine and soft, but until the stable manure is thoroughly mixed all through it. After the soil is smoothed off nicely, about half an inch of sand is spread evenly all over the surface. Then the plants are set pretty well down. If the first leaves come under the sand, it will not hurt them a bit, for the sand will not stick, nor soil a leaf of any thing, cabbage or strawberry. Now the surface can not get very dry, for this sand mulching keeps it damp; and when the sand gets real dry it will run into any crack, if there is one, and fill it up. In this condition you can put on almost any amount of water, right in the hot sun, without any danger of cracking at all.

"THE STRAWBERRY CULTURIST, ETC.," ETC.

And now we have a periodical devoted entirely to the culture of the strawberry. It comes only four times a year, however, and the price is only 20 cts. per annum. It seems to me there ought to be at least a hundred thousand people in our country who should take such a journal at so insignificant a price. May be, however, I had better strike off one figure and say ten thousand. Of course, a good deal will depend upon who is editor and how it is managed. The opening number—Vol. I. No. 1—seems to promise very well. Address W. F. Allen, Jr., editor and proprietor, Salisbury, Md. I would suggest that the editor of the paper be a little careful about recommending every new strawberry that comes out. If I were he I think I would take a pretty strong hold on the experiment stations in this matter. Don't let a thing be boomed—at least editorially—until some experiment station has tried it and declares it possesses merit. Not only the matter of growing strawberries, but shipping and selling them, is going to need much consideration and discussion. By the way, I am going to have something to say about a method of raising strawberries where no one ever sets foot on the ground where they are growing. They are to be grown in the plant-beds of which I have already shown you pictures. Sashes and shutters can be used over these beds when need be; weeds can be kept out without tramping among the vines; mulching can be applied; fruit can be picked without ever setting a foot on the ground, and, of course, there will be no setting a foot on the plants or on the berries. The extra labor will be one of the objections; but with every thing purposely rigged for it, there will not be so much extra labor, after all. We have got the thing already going.

BAG-HOLDERS, ETC.

Look here, Dr. Miller, we do have bag-holders. They are standing out in front of the store all the while, mounted on a neat little truck, to carry grain. But when I am in a hurry, bag-holders are not often around. You say, put two hooks in the wall. Well, there is not any wall most of the time. We have regular bag-holders for our mail-bags, and other bags where they are used almost every day. But you see when my wheel is "champing its bits" for a run, and there are only just so many minutes before the mail closes, we can not very well hunt for a bag-holder or a—"wall." Why, our little girls out this way just like the idea of holding the bag occasionally, especially when

they understand that it is helping me along. You see, I help them (or at least they think so), and when they have a chance to help me they enjoy it; and I suppose they are feeling considerably elated just now because for once in the world they got ahead of the boss, even if it was on so simple a thing as holding a bag.

TOBACCO COLUMN.

CONDITIONS UNDER WHICH WE GIVE SMOKERS TO PERSONS WHO STOP USING TOBACCO.

First, the candidate must be one of those who have given up tobacco in consequence of what he has seen and read in this department. Second, he promises to pay for the smoker should he ever resume the use of tobacco in any form, after receiving the smoker. Third, he must be a subscriber to GLEANINGS. Any subscriber may, however, have smokers sent to neighbors or personal acquaintances whom he has labored with on the matter of tobacco-using, providing he give us his pledge that, if the one who receives the smoker ever uses tobacco again, he (the subscriber) will pay for the smoker. The one who receives the smoker in this case need not be a subscriber to GLEANINGS, though we greatly prefer that he be one, because we think he would be strengthened by reading the testimonials from time to time in regard to this matter. The full name and address of every one who makes the promise must be furnished for publication.

I take GLEANINGS. I never used tobacco except to smoke; but I have quit smoking and never expect to use tobacco again, smoker or not. As you are giving them away I shall be glad to receive one. P. L. DEBO.
Boonville, Mo.

Mr. Thorp has quit the use of tobacco, and promises to pay for a smoker if he ever uses the weed any more. Mr. T. is a bee-keeper, and uses J. M. Jenkins' (or Root) frames. I could not get on without GLEANINGS.
Eupora, Miss., Mar. 17. W. B. ENOCHS.

Reading GLEANINGS has influenced G. J. Potter, Silver Creek, Mich.; and, seeing the folly of the habit, he says he will never use tobacco in any form. But if he ever does I will pay you for the smoker. FLOY POTTER.
Silver Creek, Mich., Mar. 23.

I see in GLEANINGS that you give a smoker away to those who will pledge they will never use tobacco again. I do not chew, but I smoke some. Please send me a smoker and I will certainly pay for it if I do not keep the pledge.
Springfield, Mo., Feb. 21. CHARLIE TRONE.

I send you three names of tobacco-users who say that, if you will send them a smoker, they will quit the use of tobacco; and if they use it any more I'll pay for the smoker. The names are R. T. Miller, J. L. Reed, M. L. Reed. They are all new bee-keepers. G. H. REED.
Anneville, Texas, March 6.

I have been a subscriber to GLEANINGS for six months. Since I commenced reading it I have quit using tobacco. If you are still sending the smoker, please send me one; and if I ever commence using tobacco again I will pay for the smoker. H. GEFFERT.
Ballard's Falls, Kan., March 7.

Mr. M. Hoyt, Mossy Rock, Wash., has quit the use of tobacco. I showed him what you said in GLEANINGS, and told him that I would have you send him a smoker. He quit last May, 1892, and hasn't used any since. If you think he is entitled to a smoker, send him one; and if he ever commences the use of tobacco again I will pay you for the smoker.
Mossy Rock, Wash. J. H. GAE.

GLEANINGS IN BEE CULTURE. A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS. ILLUSTRATED SEMI-MONTHLY 36 PAGES 7×10 $1.00 PER YEAR.

Wisdom is more precious than rubies; and all the things thou canst desire are not to be compared unto her.—PRO. 3:15.

THE time for holding the next meeting of the N. A. B. K. A. in Chicago, is October 11, 12, 13.

WE are not quite ready yet to give the result of our experiments with electrical uncapping-machines. It is sufficient to state, that Mr. J. S. Reese and ourselves are still at it, and it remains to be seen whether one or both of us will be able to produce any thing of value.

THE *American Bee Journal* for May 4 contains a biographical sketch by Dr. Miller, and some complimentary references, from the editor of that journal, to the senior editor of GLEANINGS. We tender our sincere thanks; but in the mean time we fear that we may never be able to fully reciprocate the kindness of Bros. York and Miller.

WE have not said very much about it of late, but our readers may have noticed that we have been giving eight extra pages ever since the fore part of the year, and the prospects are that we shall have to continue doing so for some time longer. The reason is, a press of good matter awaiting its turn, and a general crowding in the advertising department.

A NEW edition of "Bees and Honey," by Thomas G. Newman, 1893, published by G. W. York, Chicago, is on our table. We notice new engravings scattered here and there through the body of the work, and we presume there have been additions here and there through the reading-matter. It is nicely printed, bound in paper. Price 50 cts. It can be obtained of us or of the publisher.

WE call special attention to the leading article in this number, from the pen of P. H. Elwood, on his mammoth bee-cellar wherein he winters successfully annually over a thousand colonies. If any of our readers have any questions to ask, we hope they will send them on to us, and we will save them up and forward them on to Mr. Elwood. He no doubt will make them the foundation for another and possibly more articles.

WE have just received the May 1st number of the *Progressive Bee-keeper*, published by the Leahy Manufacturing Co., Higginsville, Mo. It comes out in a bright new dress, and the first cover page is a beauty. We are glad to know that the *Progressive Bee-keeper*—a paper that has always been progressive in ideas—gives evidence of being more progressive than ever; and we have no doubt that it will be a valuable medium to bee-keepers, especially south and west. We can club the *Progressive Bee-keeper* with GLEANINGS for $1.30.

OUR winter losses will aggregate 40 per cent, and many of the surviving colonies are weak. Those colonies, especially the hybrids that were not used for queen-rearing, or that were not otherwise depleted by the filling of nucleus orders, are strong and in good order, showing that, if our business had had been strictly confined

to the production of honey, our losses would have been merely nominal. We know of nothing that presages bad wintering any more than queen-rearing and filling nucleus orders from every colony in the apiary, clear up until cold weather sets in. This is pretty near what we did last fall. By the way, some of the prominent bee-keepers are singularly silent as to their winter losses or successes.

W. G. TITTSWORTH, of Avoca, Ia., sends us two pieces of wide-frame holders that have been entirely riddled by common black ants. The piece is quite a curiosity—in fact, it is a mere shell. Mr. T. says he once had a colony of bees destroyed by them, the ants having made their way into the hive by eating a hole through the bottom of the same. He has also had the same pests eat their way through the wooden crates into the comb honey, ruining it for market. We were not aware before that any ants in the North could or would do such work as this, although we have had many reports of their cutting up similar didos in the South.

SINCE writing our "getatable" editorial on page 362, it occurs to us that we can make our idea more "getatable" by saying that, if you have an idea or invention, first describe briefly in a nutshell the main principle, and then build up around it. If you employ a carpenter to build a house, he first wishes to look at a *general* plan before he is able to understand the detail drawings of the various parts of the house. It would be folly to give him the detail drawings first and let him figure out the general plan of the house later on, *if* he can. This latter is what some of our correspondents have been doing. If the subject is of that nature, give us a small nucleus, comparing the implement or invention with some common article, after which give the general supplementary matter. Now, dear readers, whenever *we* do not write in a "getatable" shape (and we acknowledge we are just as guilty as any of the rest of you), please point our gun around toward us.

REPORTS are coming in, showing that the losses from wintering are going to be pretty severe this year—probably greater than any year since the unprecedented bee mortality of 1880–81. Many bee-keepers are discouraged, and are going out of the business. The prospects in California seem to be unusually bright, and the probabilities are that there will be an immense honey crop there this year. The season has opened up again with us after a lapse of three or four weeks of bad weather. The prospects seem to be unusually bright for the survival of the fittest. Those who have wintered successfully will probably secure a good honey crop, and get good round prices. There will be less competition from slipshod bee-keepers, and perhaps less from some who are not slipshod, who are very unfortunate in losing their bees, or, at least, a large portion of them. This, in brief, is the situation after reading hundreds of reports that have come in within the past few days.

So many questions have been coming in of late, many of them already covered in the standard text-books, it seems necessary for us to revive an old department, with the heading, "Answers to Questions from Beginners." Beginners either do not read carefully the text-books, or else those same books are not sufficiently explicit in certain details. As one answer may be valuable to many, we have decided to answer many of the questions in this department that have heretofore received a private answer, even at the risk of going over old ground already in our A B C and other text-books. Indeed, it may help to make the subject plainer to have it restated in different language. We shall not attempt to answer every question, as some of them would certainly be of no general interest; but the great majority will be answered here; and if the querist is not a subscriber of GLEANINGS, he will go without the answer.

IT is about time now when bee-keepers can begin to tell definitely how their bees have been wintering. As we wish to make up another batch of statistics for our June 1st number, if possible, showing the mortality during the past winter, we shall be greatly obliged if every one of our subscribers in the United States will send us a postal card answering these two questions: 1. What per cent of your bees have wintered? 2. What per cent of the bees in your locality, as near as you can estimate, have wintered? Now, please do not fill up the card with a lot of other matter, giving the cause of the mortality, etc. Just answer the questions by straight per cents, and nothing more. When we have to average up hundreds of postals, we can not afford to wade through a lot of preliminary matter before the questions are answered. Now, unless you attend to this matter by the next mail, we are afraid you will forget it; and if *you* do not do it, the report will lose just that much of its value in accuracy.

SOME OLD BEE-BOOKS.

WE have just purchased from the library of W. P. Henderson, of Murfreesboro, Tenn., a large collection of rare and valuable old bee-books. Some of them date back over 230 years. Although these works probably will not give us any "new kinks," they will be valuable as reference, as proving what is old and what is new. Our proof-reader and translator, Mr. W. P. Root, seemed so greatly interested in the great stack of venerable books as they were unpacked, that we asked him to review each one and give a brief digest of them, pointing out such features as may be of interest to the bee-keepers of to-day. As Mr. R. is well versed in the literary features of bee culture, having read the proof of GLEANINGS for the past thirteen years, as well as the foreign journals most of that time, we believe he will be able to give us a rare feast indeed from these old books. We will from time to time reproduce some of the more quaint features of some of them. The review will begin in the June 1st issue, and will, perhaps, continue through four or five numbers.

N. B.—We hope none of our friends will ask us for the loan of these books, as many of them are rare and valuable, and would hardly stand the rough usage to which ordinary mail and express matter is subject.

GUILTY OR NOT GUILTY?

MAY be I am making a mistake, but I think I would follow the advice of friend Moore, on page 385. If all the lawyers in the world, and the rest of the people thrown in, should tell me that it was best to plead guilty when I was entirely innocent of the offense, I think I would stand to the truth, no matter how much money it cost, and no matter if they put me in jail. I suppose people *are* put in jail who are entirely innocent. I have met some cases of this kind—that is, they were innocent of the offense with which they were charged. They were unfortunate, however (at least they put it that way), in having neither friends nor reputation. Now, the trouble comes in right here: Every real good, straight, square man has, as a rule, plenty

of friends on every side who will spring to his rescue, and effectually stop proceedings—that is, if he is entirely innocent. If he has been partly guilty, or his past records show crookedness in other matters or in like matters, then his friends can not be blamed if they are tardy in hastening to his rescue. This gives us a glimpse of the value of *character*. See text at the head of this department. Something was once said jestingly about putting me in jail. A good friend of mine stood up and said, "Mr. Root, if you go to jail, I go with you." There are people all round about me in whom I have so much confidence that I believe I should rather enjoy saying the same thing of them. Remember this: "Blessed are ye when men shall persecute you and revile you, and say all manner of evil against you falsely, for my sake." Do not leave out the little word "falsely." When you propose being a martyr for righteousness, be very sure that you are entirely innocent in *thought* as well as in deed. A. I. R.

SMOKERS; CAN INDUCED CURRENTS INCREASE FORCE IN BLAST OF SMOKERS?

On page 131 of the last *Bee-keepers' Review*, just at hand, Mr. S. Corneil, in an article, seems to show, in quite an elaborate series of experiments, that a smoker having no connecting-tube between the fire-cup and bellows, as in the case of the Bingham, will give actually a stronger blast, to the extent of 40 or 80 per cent, than a similar one having a connecting-tube—that is, an air-tight tube connecting the bellows with the fire-cup; and then Mr. C. goes on to assume that this increased blast from the first-mentioned kind is due to the "induced current." We regret that, in this experiment, Mr. C. was not using one of the latest Crane smokers. No doubt it was one of the first of that kind that was sent out, and quite a crude implement compared with those we now send out. But leaving out of account for the moment the question of smokers we must say we were greatly surprised at such a statement, coming from a man of Mr. Corneil's scientific attainments. It seems to us that it is only another way of saying that you can make something out of nothing. You can no more *increase force*, without the outlay of additional energy from some other source, as, for instance, heat, than you can pull yourself up by your bootstraps.

Later—After the above was in type we sent a proof of it to the editor of the *Review;* and in his reply thereto he calls our attention to the fact that Mr. Corneil does not assert that extra power is *generated* by the use of the induced current; and that, although he (Mr. C.) says the strength of the blast is increased, he admits, in a previous article, that more energy will be required to work the bellows to do it.

If this is Mr. Corneil's real position, it does not seem to us that his article in the last *Review* proves any thing, because it is simmered down to this: That, if the induced-current smoker requires a *greater* effort of the bellows to secure a *stronger* blast over the Crane, it proves that the latter was hardly given half a chance in the contest. Remember that the tabulated report shows that the induced-current smoker showed the stronger blast. To make it fair to all the smokers, there should be the *same effort* applied to each bellows; the same size of bellows, and same size of smoker-cup, and all should be equally tight.

Mr. Hutchinson also says that the Crane smoker upon which Mr. Corneil experimented was an "old one, made up of odds and ends, and leaking." In view of the fact of its being an old smoker, not one of the new Cranes, and that *apparently* more effort was used to work the bellows of the Corneil smoker, it seems to us that the experiment should be tried over again. We will gladly furnish a new Crane.

JAKE SMITH'S BOY'S HONEY-PEDDLING MACHINE.

Look here, friends; I have got something to say about that invention. I do not mean that I ever thought of it before, because I didn't. I never thought of such a thing until I saw the picture on page 391; but ever since that picture came before my eyes I have been thinking about it; and my candid opinion is, that Zed has struck on a great invention. Why, if you will give me such a machine, and only a tolerably fair road, and put pneumatic tires and ball bearings on those two back wheels, I will guarantee to take Mrs. Root and the smallest of the children, and give them about as much speed as they can stand. I shouldn't want to go up hill very much, but I think I could stand a moderate incline. No wonder old Jake has stopped his work and sat down with his whip across his knee. The main trouble at the present time is a lack of suitable roads for such a vehicle. Just give me a good road, and I will manage the rest of it. I do not believe anybody at the present time has any sort of conception of what the future will bring forth in the line of that picture. You need not think I have given up carrying the mails because I am not talking about it. We have been behind on orders for plants, you know. Well, a few days ago the train was whistling that should have carried an important shipment of plants. Our clerk in the express room was just saying, as I whirled up on my wheel, "Well, there is no use; A. I. can't carry *that* package, even if he were here." He thought the package was too heavy, and that the time was too short. Said I, as I fetched up before the door, "Bring on your package of plants." It took a minute to get my wire rack in place, and off I started. It was fully half a mile to the new depot. I could have made the crossing before the locomotive did, but my basket slipped once so that I was obliged to get off. As it was, I came up behind the train, handed the basket into the express car with the receipt all made out, just as the train got under way. Give me a smooth road, even though it is a little up grade, and it is only play to make 100 pounds (besides yourself and wheel) just hum.

Almost all my life—at least during my business life—I have longed for something that would enable me to get from place to place faster than I could walk. A horse and buggy might do were it always hitched up and ready; but even then a horse and buggy is unwieldy in getting started and in stopping. Another thing, I can not put my own muscle and energy into a horse. I did not suppose it was possible to find in this world of ours any thing that would fill this long-felt want; but the wheel does the business. Oftentimes I am off at one end of the farm, when I suddenly recollect that I ought to be immediately at the other end. I have learned by experience that it will not do for me to run, even if it were the thing to do; but people have already become so accustomed to seeing me rushing past (faster than a horse) on my wheel, they do not mind it. Nature does not mind it either. I can ride just as fast as I please, and the bad effect produced is seen only on the provisions at dinner-time. The wheel seems almost a part of my make-up, and I begin to wonder whether it was not a part of the plan of the Almighty from the beginning. If so, I am sorry for the people who lived a generation ago. A. I. R.

TRADE NOTES.

HIVE-COVERS.

There seems to be a good deal of misunderstanding as to the exact construction of our double-decked gable cover, as illustrated in our catalogue, and we have therefore prepared some new engravings showing it a little more clearly. The sectional view at the upper left-hand corner of Fig. 3 shows that it is made up

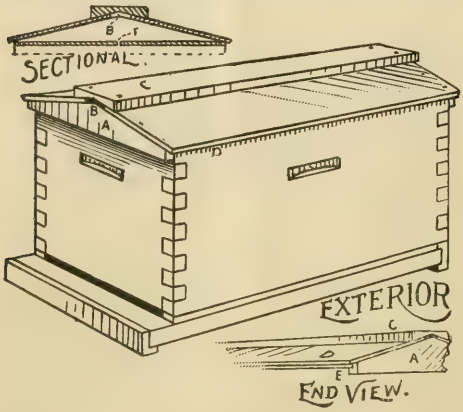


FIG. 3.—ROOT'S GABLE HIVE-COVER.

of 5 pieces of board, 4 of which are of ⅞ lumber. The longer boards are nailed into the ridge-board far enough apart to leave a gap, as at B. This makes the ventilator — one, of course, being at each end. As it is desirable nowadays to have all the covers flat on the under side, the two shorter ⅞ boards are nailed to rabbets in the gable-end pieces, as shown at E, end view.

This cover was made in response to a demand from the far western and southern friends—a light, neat, double-decked cover—for something that would be suitable for hot climates, or, at least, more effectual to resist the sun than the old-style flat cover made of ⅞ boards. The ventilators at B, in the sectional view, are designed to give plenty of top ventilation; and we found in practical experience last summer that colonies under such covers, exposed to the direct rays of the sun, without any shading, were less inclined to cluster out on hot days; and, except in very hot localities, we believe the ordinary shade-board would be unnecessary.

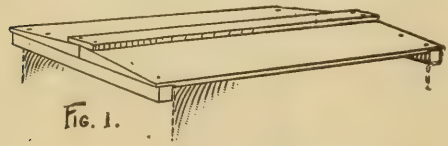


FIG. 1.

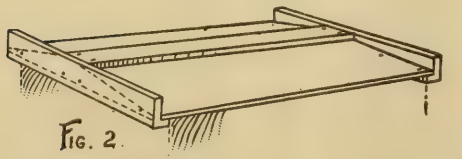


FIG. 2.

THE HIGGINSVILLE GABLE COVER.

Another very excellent gable cover—one that is designed to take the place of the flat cover, is the one devised and made by the Leahy Mfg. Co., of Higginsville, Mo. The idea we considered so good that we asked the firm to send us a sample cover. We placed the same in the hands of our engravers, and the result we herewith show in Figs. 1 and 2. Fig. 1 shows the regular gable cover, such as the Leahy Co. have been sending out. We have not made any inquiries as to how the same is made; but from a manufacturer's standpoint, we judge that it is made by sawing a 1¼ board, a little greater than the length of an ordinary hive-body, and half its width, diagonally through the thickness, in such a way as to leave two pieces, each of which has one side ¼ inch thick by ¾ on the other. The two thick edges are put together, and cleated as shown in Fig. 1, the point of meeting, or the crack, being covered by an ordinary ridge-piece. The ordinary flat cover, made out of two ⅞ boards, half the width of the hive, the union of which is covered by a V-shaped strip of tin, is a very poor arrangement — see Dr. Miller's Straws in this issue. Such a cover was designed either as a cheaper substitute for the single-board flat cover, or to do away with the warping. While it may have accomplished the latter, our own experience, as well as that of others, has shown that they leak very badly, and were decidedly a poor piece of economy in the end. The Higginsville model, we judge, would give no trouble from warping; would be perfectly water-tight, and, moreover, answer the requirements of those who prefer a single-thickness cover that may be handled with one hand.

Along with the Higginsville gable cover came another sample from the same firm, showing a little different combination—see Fig. 2. The

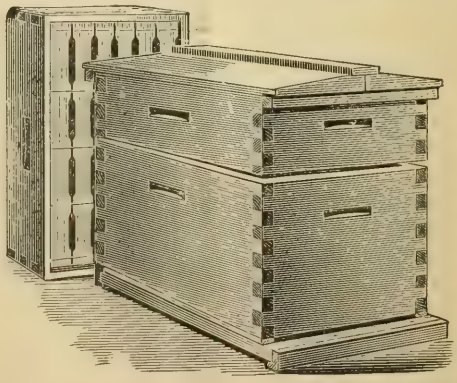


FIG. 4.—HIGGINSVILLE GABLE COVER AND HIVE.

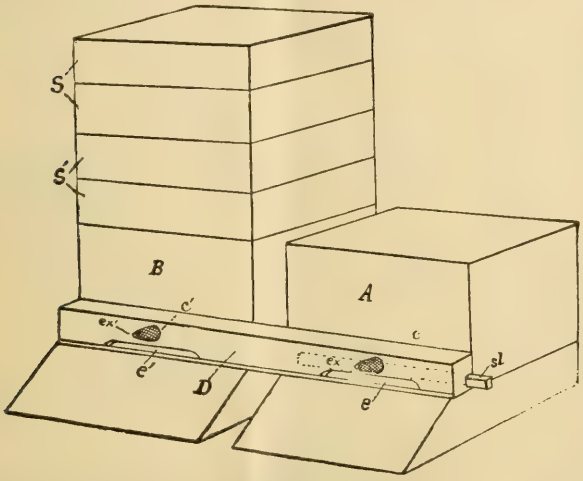
end cleats are rabbeted out as shown. This would really make a stronger cover, and at the same time would allow hives to be tiered up one upon the other. With all the other forms of gable covers, the stacking-up feature is impracticable, especially when heavy hive-bodies are filled up with comb. This is really a minor consideration; but it has weight with some.

THE NEW LANGDON NON-SWARMING DEVICE.

A few issues ago we promised to give a description of this as soon as the inventor was ready to have its details described. He has now given us authority to set forth the principle of its workings, as well as the construction of the device itself. On account of certain engravings not coming to hand, we are unable to publish a very interesting article by Mr. Frank Benton, on the Langdon non-swarming device —an article which appeared in *Insect Life*, issued in April, 1893, by the United States Department of Agriculture, Washington, D. C. For the present, at least, we shall have to content ourselves with a brief description, taken

from the specification of the U. S. patent to be issued to H. P. Langdon, of East Constable, N. Y.

At the beginning of the honey season, when the bees are at work in the super cases, the device is attached to the front of a series of hives, as shown in Fig. 1. The bees will then pass into and out of their respective hives through the entrance apertures *e* and *e'* in the device. By inserting the slide *sl* in the end of the device, as also shown in Fig. 1, the inner entrance of the device will be closed at hive A, thereby excluding the bees from said hive, the flying bees therein being permitted to come out through the conical screen exit *ex*. The super cases of hive A are then placed upon hive B, as shown, which latter hive then holds the super cases of both hives.



THE LANGDON NON-SWARMING DEVICE.—FROM "INSECT LIFE."

The working bees of hive A, finding their entrance closed on their return, are attracted along the gallery by the buzzing of the bees at the entrance *e'* of hive B, and enter said hive. This withdrawal of the working bees from hive A so impoverishes the nurse or brood bees left therein that they will not swarm; meanwhile work is going on without interruption in the super cases on hive B, by the field force of both hives. At the expiration of a few days, the super cases on hive B are all placed upon hive A; the slide *sl* is withdrawn from entrance *e*, thus opening said hive, and is inserted in the opposite end of the device so as to close entrance *e'* to hive B. The bees thus excluded from said hive will be called along the gallery of the device by the bees at entrance *e*, and with said bees will enter hive A, thereby causing the same conditions in hive B as were previously induced in the closed hive A, the flying bees in hive B escaping through the screen exit *c'*. Within a week or so, the super cases are again placed upon hive B, and said hive is opened and hive A closed; then after a few days, said cases are changed back to hive A, and so on alternately between said hives during the honey-flow.

This alternation in reciprocal succession of the working bees between the hives, and the concurrent transfer of the super cases, so disturbs and impoverishes the brood bees in the successively closed hives, that organization for swarming can not be effected, thereby obviating prime swarming, and enabling the field bees of each hive to work without interruption through the entire honey season.

And again, in a letter, Mr. Langdon writes:

There you have the entire management of the whole thing; and the simplicity of the plan in practical use is astonishing.

Besides preventing swarming, more honey can be secured, of a nicer, cleaner quality; no bait combs are needed; the benefits of contraction are realized without extra work of contracting the brood-nest, by expanding the bees, and other important points I might name.

This has all been proven by working the principle on 100 colonies last year, so I am not making my statements at random.

By following the description carefully, we think most of our readers will be able to catch the idea. The device itself is shown at D, in the figure. It consists of a sort of chamber, the mechanical arrangement of which is such that the entire working force of one hive can be turned into the other every few days by the manipulation of a little slide; and the fundamental principle of the device, as we understand it, is the moving of the entire working force of the hive from one hive to another often enough to prevent cell-building, or to remove, for the time being, those conditions that induce swarming. "For," says Mr. Benton in *Insect Life*, "the immediate condition which incites a colony of bees to swarm has been quite well recognized as its general prosperity — its populousness, the abundance of honey secretion, and crowded condition of the brood-combs, or, in general, such circumstances as favor the production of surplus honey, especially surplus comb honey; and it has, of course, been taken for granted that honey could not be secured if these conditions were changed." And then Mr. Benton goes on to say that these conditions would not be changed, except for the very simple mechanical device invented by Mr. Langdon; and yet the change is not such as to interfere with the production of honey.

What the new device is expected to accomplish is thus explained by Mr. Benton:

The experienced bee-master will not only readily see that this meets the requirements mentioned in the first part of this article as advantageous to secure, but also that in many other ways it is likely to prove a system of great value in the apiary. Mr. Langdon has mentioned some of these, and I will therefore quote from his letter:

1. Two light colonies that would not do much in sections if working separately make one good one by running the field force of both into the same set of supers.
2. No bait sections are needed, as the bees can be crowded into the sections without swarming.
3. The honey will be finished in better condition, that is, with less travel-stain, because the union of the field forces enables them to complete the work in less time.
4. There will be fewer unfinished sections at the close of the honey harvest, for the reason just mentioned.
5. Also for the same reason honey can be taken off by the full case instead of by the section or holderful.
6. Drones will be fewer in number, as a double handful will often be killed off in the closed hive while the other is storing honey rapidly.
7. Artificial swarms and nuclei can be more easily made, as combs of brood and bees can be taken from the closed hive in which the queen can be found very quickly.

As there is, in carrying out this system of swarm prevention, no caging of queens, cutting-out of queen-cells, manipulation of brood-combs, or even opening of the brood-chambers at all during the honey season, and all the vexatious watching for swarms, and the labor and time involved in securing these are done away with, and instead of this a simple manipulation attended to not oftener than once a week is substituted, it is plain that very many more colonies can be managed by one person; and, indeed, Mr. Langdon informs me that he "can care for 200 colonies with one day's work in a week with no help, instead of working all the time with 100 colonies." It will, therefore, prove a great boon to all having numerous out-apiaries.

I wish to say here a word in praise of GLEANINGS. I am so fond of its contents that I can hardly wait its arrival. No sooner does it come than it is eagerly read, not only by me, but by my wife and mother, and I do not wish to have it discontinued as long as I can pay for it, as it is very cheap.

West Braintree, Vt., Mar. 20. PERRY W. SMITH.

ADDITIONAL EDITORIAL.

THE WORLD'S FAIR AT THIS DATE, MAY 15.

WHILE none of us here in the office have as yet made a visit to the great exposition, we have been informed in regard to the way it is going on up to a recent date. I presume many of you are anxious to know whether the stories given in the papers, in regard to excessive charges and extortion, are true. They are partly true, or, at least, *were* partly true; but at the present time I think that at least most of these wrongs have been righted. In fact, the president of the fair himself has taken the matter in hand. The stories about charging for a drink of water are, I think, a mistake. If, however, you insist on having *iced* water, you would probably have to pay something for it. The statement that roast beef costs a dollar, and 10 cents more for a plate to eat it on; a cup of coffee 10 cents, and 15 cents more if you want sugar and milk; extra for a towel when you pay for lodgings, and things of a like nature, were at one time true, I believe, but have been corrected. Of course, this refers to matters *inside* of the grounds. Outside you can get almost any of the necessaries of life at pretty nearly the usual price. You can also purchase a cheap lunch-basket, and carry your lunches along with you. Thousands are doing this very thing, with but little trouble or expense. Let us remember that those who have paid for the privilege of keeping restaurants and refreshment-stands *on the grounds* have paid tremendously; in fact, the amount goes away up into the thousands, and these people may have been afraid that they were not going to get their money back. At the present time, however, a uniform schedule of prices for eatables has been established, and these are furnished to visitors so that every one who takes pains to be posted can tell when he is being overcharged. Plenty of seats are furnished on the grounds, for any one to rest who is weary. Of course, there are many opportunities to pay out money, even after you have paid your 50 cents admission fee. But there is probably more to see and look over, without any extra pay, than the average visitor would get through with in weeks; or if you go into details, it might take months. If one goes with a disposition to find fault, and to complain, he will, perhaps, find enough to grumble about. If he goes for instruction, entertainment, and recreation, and takes a good-natured view of things, he can get enough to pay him over and over again for what the trip ordinarily costs.

My informant, who left the fairgrounds Saturday afternoon, May 13, says there is much greater danger of being swindled by the fakirs and gamblers around the gates outside of the grounds than there is inside. Inside, they are forbidden to ply their swindles; therefore, look sharp. As an illustration: He saw a woman pay a dollar for a stool. The vender persuaded her that none could be had inside of the fairgrounds. When she got to the gate with her stool she found they would not let her carry it through. Furthermore, nice stools were for sale on the grounds for 35 cents; and any time you get tired of carrying it about you can have 25 cents for it back again; so the use of the stool costs you only 10 cents, and when you go away you have nothing to lug about or dispose of if you can.

Railroad fares are reduced, I believe, in every direction. For instance, the regular fare from Medina to Chicago is $10.00, and the return is the same. You can now get a ticket to the exposition, and return, for only $13.50. Other roads, I am told, have made corresponding reductions.

The first Sunday has been passed with the gates all closed, and every thing was quiet and orderly.

Later.—I asked one of our bee-keeping friends, who stopped here on his way to Chicago, to let us know at once in regard to extortionate charges, etc. Here is a postal from him, just at hand:

Mr. Root:—

I think the matter of the visitors to the fair being charged extortionate prices has been greatly exaggerated. Water is free in almost every building, for drinking, and also in toilet rooms, with the exception of a few buildings where they charge 5c for use of toilet rooms. I met Dr. C. C. Miller. He promised to give you a full account of the matter.

Chicago, May 12. PHIL. SESLER.

SPECIAL NOTICES.

COMB FOUNDATION DECLINED.

Please take note of the decline of 3 cents per lb., in the price of comb foundation, mentioned in last issue.

BUSINESS AT THIS DATE.

We are filling orders promptly with but very few exceptions; indeed, so promptly that additions to orders generally reach us after the goods have gone. If you have any additions to make, better send them with the order if you would be in time.

MORE CARLOAD SHIPMENTS.

Since our last report on carload shipments we have shipped the fourth car to Jos. Nysewander, Des Moines, Iowa; have sent two carloads to G. G. Wickson & Co., Los Angeles; a carload of square honey-cans also, to Hook Bros. & Oak, Perris, Cal.; also a carload of hives, sections, etc., to Barteldes & Co., Denver, Col.; and as we go to press we are loading the second car for St. Paul, Minn.: and our friends in that section should apply to H. G. Acklin, 1024 Miss. St., St. Paul, for whatever they need in the bee-line.

THICK AND DIVIDED TOP-FRAMES.

We have in stock some seventeen boxes, each containing 250 L. frames, with ordinary side and bottom bars ¼x⅞, and with divided top-bars ⅞ in. deep and 1 inch wide, or each piece ½ inch wide. In nailing up these frames it is the purpose to put a piece of foundation, either a starter or a full sheet, between the two parts of the bar, thus clamping it securely. We will close out these frames at $2.00 per box. For a smaller quantity, which would have to be repacked, $1 00 per 100.

SLICED SLOTTED SEPARATORS.

We are now making all our slotted separators by sawing them, because we believe them to be stronger and better made in that way, even if they do cost a little more. We have on hand several thousand slotted sliced separators, some of which became slightly discolored in drying. These are 4½x18 inches, for use with section-holders. We have also a lot not discolored, the same width, 17 inches long, for use with slotted bottoms for four rows of sections, without blocks at the ends, or such an arrangement as our combined crate. We will furnish either, while they last, at 35c per 100; $3.00 per 1000, or half the price of the sawed ones.

JAPANESE BUCKWHEAT.

If any of our readers have a surplus of choice Japanese seed for which they desire a market they may do well to submit to us a sample by mail, with name and address attached, so we can tell from whom it comes; also write us, stating the quantity you have to sell, and what you ask for it. If quality is all right, and we can afford to pay the price, we may find among those who order of us some one near you to whom it may be sent at a small expense for freight charges.

We call the attention of those who wish to buy, to our announcement in another column. Please do not order by express unless you are prepared to pay more in express charges than you do for the seed.

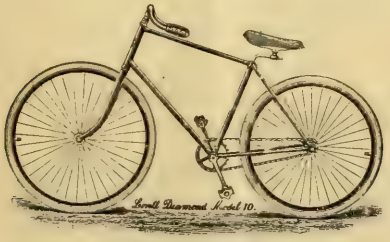
OLD-STYLE NOVICE EXTRACTORS.

We still have at Syracuse, N. Y., two No. 7 and one No. 10 Novice honey extractors, with old-style Novice gear, which we offer at $6.00 each. They are the same in every respect, except the gearing, and a bargain at the price.

We have also a No. 10 extractor with "humpback" gear, at St. Petersburg, Fla., that we will sell f. o. b. there for $7.50. This gear is just as strong and serviceable as the new bevel gear; but the crank is on top instead of at the side of the can. It was one we made before we adopted the bevel-gear, which we now use exclusively. The supporting arm runs across the can the same as on the bevel gear, and the crank-wheel and pinion work on the same plan as the old Novice, but are three or four times as heavy and strong. This is a bargain for some one in the South in need of a machine that will take frames of any size up to 13¾ deep and 19 inches long.

AUGITE STOVE-MATS.

It is just six months since we first called the attention of our readers to this most valuable household utensil, well nigh indispensable in cooking properly all kinds of food and drink. During this time we have been the means of distributing to the ends of the earth no less than 101½ gross, or about 15,000 of these mats. The expressions of pleasure and satisfaction from those who have used them have come in almost every mail, and are usually accompanied by orders for more for friends; for, having found a good thing, they were not content to keep it to themselves. Having sold so many we are getting a lower price from the manufacturer, and now make a further slight reduction in prices as follows: 15c each; 3 for 40c; 6 for 75c; 12 for $1.40; 2 doz., $2.75; 3 doz., $4.00; 6 doz., $7.50; 12 doz., $14.00. You pay transportation charges at these prices. By mail, 5c each extra for postage. Don't be deceived into buying counterfeits and imitations of these mats at a less price. The augite mat is the original and genuine, and is far superior to all others. We have tried them, and know.



SAFETY BICYCLES.

We now have a supply of catalogues to send promptly to all applicants, together with special prices, which are an inducement for you to place your orders with us. If there is any other make of wheels that you prefer to the Lovell Diamond, we can secure it for you. We hardly believe, from what we have seen of different makes (and we have examined many), that you will get better value for your money anywhere than in the Lovell Diamond.

A GOOD BICYCLE CHEAP.

We have just come in possession of a Victor spring-fork cushion-tire Safety bicycle. It has been used comparatively little, and is in fine order, all nickel parts being bright, bearings and all moving parts of the machine being as perfect as when it came out of the shop. It is second only to the pneumatic-tired bicycle, with this in its favor—tire will give no anxiety or care. It cost originally $135.00; and, indeed, the same to-day could not be purchased at the factory for less than that figure. Desiring to dispose of it quick, we will let it go for $65, providing the cash accompanies the order. As this is a bargain you will have to write quick if you wish to avail yourself of this offer.

CHOICE ONE-PIECE SECTIONS CHEAP.

In looking over our stock we find a larger quantity of the narrower width of sections than we care to have; and to move them off before the season closes we offer them, for a limited time, at reduced prices. They are all 4¼x4¼, open top and bottom, and of the following widths: 1½, 1⅝, 7 to foot, 1¾, and 1 13/16. The most of them are of the last three widths mentioned. They are all No. 1 white choice stock, most of them put up in light cases. Prices will be, for 1000, $2.75; 2000, $5.00; 5000, $12.00; 10,000 or more, $2.25 per 1000, net cash with the order.

We still have a surplus of No. 1 cream sections, 4¼x4¼, 1⅞, and 1 13/16, which we will continue to sell at $2.00 per 1000; 5000, $9.00; 10,000 for $17.50. No other sizes or styles furnished at these special prices. We have been making and shipping our No. 1 white sections, for the past two or three months, at the rate of over a million a month, and they are giving excellent satisfaction.

SECOND-HAND FOUNDATION-MACHINES.

We have here a few more second-hand comb foundation mills to dispose of, as follows:

One 6-inch No. R, hexagonal cell, for thin surplus, nearly new, and in good order; one of our late style of mills. For this we ask $12.00.

One 6-inch hexagonal mill, No. Z, latest pattern and of recent make, for surplus foundation, 10 or 11 feet to the pound. Has been used for a little while in our wax-room, and is in good order. Will sell for $12.00.

One 9-inch Dunham mill, No. V, with round cell, and for heavy brood foundation. This is in good order, and a bargain at $9.00.

One 10-inch old-style Root mill, No. W, with round cell, for medium or heavy brood foundation; has been used almost none; in good order, and a good mill for old style. Price $12.00.

One 12-inch old-style Root mill, No. Y, round cell, with shallow wall; will make foundation 6 or 7 feet to the pound. This also has been used very little; has large rolls and back gear; originally sold for $30.00. We offer it now for $15.00. Samples of foundation from any of these mills on application.

We offer also for sale four of Vandervort's mills, at Syracuse, N. Y., with F. A. Salisbury, which he describes as follows:

One 6-inch for thin surplus; not extra good.
One 6-inch for thin surplus; in good condition.
One 12-inch for 5 ft. to lb., tiptop condition.
One 12-inch for 7 to 8 ft. to lb., tiptop condition.

These will be sold at low prices, in order to dispose of them, as Mr. Salisbury no longer makes foundation, but furnishes that of our make. For prices, samples, or further particulars in regard to these mills, write direct to F. A. Salisbury, Syracuse, N. Y. The first should be worth $8.00; the second, $11.00; and the last two, $18.00 to $20.00 each, and are doubtless cheap at these figures.

VEGETABLE-PLANTS MAY 15.

We are finally up with a good supply of almost every thing, unless it is Prizetaker onions; and we have got these if you can use those which are pretty small. We have two or three thousand, more or less, extra large strong Palmetto asparagus-roots. These were taken up and put in a good cool cellar, just as they commenced to start. When they are held back in this way they can be planted any time in May, and even up to June 1. These were taken up in order to clear off a piece of ground; and under the circumstances we offer them for 60 cts. per 100, or $5.00 per 1000, until they are sold. The roots are, the greater part of them, so large and strong that it will cost about 40 cts. per 100 for postage, if they are wanted by mail. We have a full stock of all kinds of cabbage-plants, celery-plants, lettuce-plants, pepper-plants, and sweet-potato plants. As our strawberries, where the blossoms were kept off, have already commenced to send out runners, we expect to have strawberry-plants ready also some time in June—that is, a limited number of them. Of onion-plants we have a good supply of Yellow Danvers, White Victoria, and American Pearl. The American Pearl are the largest of any we have in stock, and they will probably give the earliest large onions, of pearly whiteness, of any of the new varieties. For prices of any of the above, see our seed and plant catalogue, which we are glad to mail to any on application.

STRAWBERRY-PLANTS AT PRESENT DATE.

We are about sold out of all varieties we have advertised, except Warfield No. 2. We can ship nice strong plants at 75c per 100, or $6.00 per 1000; if wanted by mail add 25c per 100 for postage.

Low Freight Rates and No Delays.

When you are considering where to send for your supplies the coming season, get prices and a list of goods on hand, from one of the following dealers, who handle **ROOT'S GOODS** in carload lots, thus securing them at lowest cost. Most of them, except those far distant, sell goods to users at factory prices, while those far distant add approximately only the carload rate of freight, so that you will **Save Time and Money** by buying your supplies of one of these dealers. We can not give here a list of goods kept, as it varies some at the different places according to the varying needs of each locality. Write to the place nearest you for list with prices, and when you write give a list of the goods you want, and mention this paper.

Quite a full line of goods are sold at factory prices by
F. A. Salisbury, Syracuse, N. Y.
H. G. Acklin, 1024 Mississippi St., St. Paul, Minn.
Jos. Nysewander, Des Moines, Iowa.
A good assortment is also kept for the Far West by
Barteledes & Co., Denver, Col.
For California by
G. G. Wickson & Co., San Francisco and Los Angeles.
For Oregon and Washington by
F. L. Posson & Son, Portland, Oregon.
For the Southeast Atlantic coast by
Baltimore Farm-Implement Co., Baltimore, Md.;
and for the Far South by
J. M. Jenkins, Wetumpka, Ala.

A smaller assortment, consisting chiefly of Dovetailed hives, sections smokers, foundation, and extractors is also kept by the following:
Henry F. Hagen, Rocky Ford, Colo. W. K. Ball, Reno, Nev. W. O. Victor, Wharton, Tex. John Nebel & Son, High Hill, Mo. Thos. G. Newman, Chicago, Ill. Walter S. Pouder, Indianapolis, Ind. Vickery Bros., Evansville Ind.

Our Hives, Comb Fdn., Sections, Smokers, Extractors, Perf. Zinc, etc., are furnished by a multitude of other dealers too numerous to mention. If you want to buy goods made at the Home of the Honey Bees, you can get them as cheap as you can anywhere when you consider quality and workmanship, and your orders will be taken care of promptly. Don't expect to get all the goods we advertise, from any of above dealers, and don't expect to get goods they do not agree to furnish; but find out what they agree to furnish, and at what price, by writing for list to address nearest you.

A. I. Root, Medina, O.

In writing to any of above please mention GLEANINGS.

FOR ALL KINDS OF KEEPERS SUPPLIES. ADDRESS LEAHY MFG. CO. HIGGINSVILLE MO.

In writing advertisers please mention this paper. 21tfdb

DOVETAILED HIVES, SIMPLICITY HIVES,
SECTIONS, EXTRACTORS, ETC.
FULL LINE OF
BEE-KEEPERS' SUPPLIES.
60-PAGE CATALOGUE. 1tfdb

J. M. JENKINS, WETUMPKA, ALABAMA.

In responding to this advertisement mention GLEANINGS.

"Quigley's Golden Italians"

Are big yellow bees bred for honey-gathering and gentleness. They have stood the past severe winter without protection and without loss. Warranted purely mated. Each, $1.00; 6 for $5.00. Safe arrival and satisfaction guaranteed. Circular of queens and a full line of bee-supplies sent free.

9-tfdb **E. F. QUIGLEY, UNIONVILLE, MO.**
Please mention this paper.

Wholesale and Retail Manufacturer and Dealer in

Bee-Keepers' SUPPLIES.

One-piece Sections a specialty. As good as the Best. Send for catalogue.
W. E. SMITH, Successor to Smith & Smith,
Kenton, Hardin Co., Ohio.
Please mention this paper.

FOR SALE!

An Apiary of 100 Stands of Bees in a Fine Alfalfa Range.

Also 90 acres of fine fruit land, as one or in small tracts for fruit-farms. Address

MRS. A. A. HODGDON,
Delta, Delta Co., Colorado. 9-10d

Leininger Brothers WILL SELL **Italian Queens**
And Nuclei Cheap. Send for Prices.
Fort Jennings, Ohio. 7tfdb

Sprouted Peach Seeds

at 15c per hundred by mail, or $1.00 per thousand by express. **DR. J. M. MARTIN, Mercersburg, Pa.**

☞In responding to this advertisement mention GLEANINGS.

WE OFFER

COMB FOUNDATION

WHOLESALE AND RETAIL,
AT VERY LOW PRICES.

Satisfaction and all work guaranteed.

Price List and **samples** will be ready before the next issue.

Send for them.

Prices will range from 36 to 56 cents per lb., f. o. b.

BEESWAX WANTED. Write for prices.

W. J. FINCH, JR.,
31 E. Monroe St., 5-10db **Springfield, Ill.**

☞In responding to this advertisement mention GLEANINGS.

Did You Know

That my 44-page Catalogue is now ready? I have the largest stock of Bee-keepers' Supplies in New England, at prices away down. My brand of XX White Thin Foundation, 12 feet to the lb., is the finest in the market (so say my customers). Just send a postal for samples and prices, before you forget it. Address

7tfdb **WM. W. CARY, Colrain, Mass.**

In writing to advertisers please mention this paper.

Free! **One untested queen Free,** in June. Send for circular, and learn terms. Circular gives the best way to introduce queens, price of nucleus, etc. 1 untested 5-banded queen, in May, $1; 6 for $5. Circular free. 7-10db

J. F. MICHAEL, GERMAN, DARKE CO., OHIO.

Please mention this paper.

Jennie Atchley

Is headquarters in the South for queens. Untested (either 3 or 5 bands), March, April, and May, $1.00 each; $5.00 for six, or $9.00 per doz. June and after, 75 cts. each, $4.25 for six; $8.00 per doz. Prices for breeders, and by the quantity, on application. Safe arrival and satisfaction guaranteed.

Jennie Atchley, Greenville, Hunt Co., Tex.

Please mention this paper. 6tfdb

Bees By the Pound, Nucleus, or Colony. Address OLIVER FOSTER, 8-tfbd Mt. Vernon, Linn Co., Iowa.

Beautiful Golden Queens.

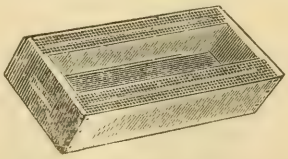
My five-banded Italians are bred from the very best of stock by Doolittle's improved methods, and mated to the yellowest of drones from selected colonies, and I guarantee them to give entire satisfaction. Untested queens are all warranted purely mated. 1 untested queen, March, April, and May, $1.15 each; $12.00 per doz. Tested, $1.50 each. Select Tested, $2.50. Guarantee prompt and safe delivery. Send for circular. **W. P. CROSSMAN,**
Money-order office. **Ballinger, Tex.**
Reference: 1st Nat. Bank of Ballinger. 5tfdb

CHICKEN-HATCHING BY STEAM

IMPROVED **VICTOR INCUBATOR**
Simple, easy of operation, self-regulating, reliable, fully guaranteed. Send 4c. for illus. Catalogue. Geo. Ertel & Co., Mfrs. Quincy, Ill. U.S.A.

A. E. MANUM'S LEATHER-COLORED ITALIAN QUEENS

Are superior to all others for business, is the verdict of those who have them. PRICES: one untested, $1; six, $5.50; twelve, $10.00. Tested, $1.50 each. Selected for breeding, $2.50 each. One yearling, tested, *in June only*, $1.00; six, $5.50; twelve, $10.00.



THE MANUM FEEDER.

Models of Manum's new "Rapid" feeder with, full printed directions how to make, and what, when, and how to feed for best results, $1.00 by mail, postage paid. Descriptive catalogue mailed free on application. 5-12db

A. E. MANUM, Bristol, Vt.

SUPPLIES.

Large illustrated catalogue free; or send 10c in stamps for ***THE BUSY BEE***, a book telling how to manage them.

WALTER S. POUDER, Indianapolis, Ind.
4-12db 175 E. Walnut Street.

BUY your **HIVES** where lumber is cheapest. That's at LeSueur, Minn. Catalogue free.
5tfdb **F. C. ERKEL.**

Eastern Supply House.

We furnish everything used in the apiary, and at bottom prices. Illustrated circular free.

I. J. STRINGHAM, 105 Park Place, N. Y.
21-20db Please mention this paper.

Cash for Beeswax!

Will pay 23c per lb. cash, or 26c in trade for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 29c per lb., or 33c for *best selected wax*.

Unless you put your name *on the box*, and notify us by mail of amount sent, I can not hold myself responsible for mistakes. It will not pay as a general thing to send wax by *express*.

A. I. ROOT, Medina, Ohio.

Choice Seed of the Japanese Buckwheat.

It does not pay to devote valuable land to the production of any plant simply for the honey it may produce. In providing forage for the bees, other than what they naturally find, choice should be made of those plants that produce honey and yet are a paying crop aside from the honey. One of these plants which generally produces honey, and a ta time when other bee-pasturage is usually scarce, is buckwheat. The best variety of this that we are acquainted with is the Japanese, which has been before the public for five or six years. With favorable conditions and good soil this will easily produce 50 bushels per acre, and it matures within a few weeks from the time it is sown. It rarely brings less than 50c a bushel for flouring, and often a much higher price. The price the past year has ranged much higher than usual, being from 70c to $1.00 a bushel.

The time for seeding is at hand, and we are provided with a good stock of choice seed which we offer, while it lasts, at the following prices: 1-lb. 5c; 1 peck, 40c; ½ bush., 70c; 1 bush., $1.20; 2 bush., $2.20; 10 bush., $10.00; bags included. By mail, 8c per pound extra for postage.

A. I. ROOT, MEDINA, OHIO.

Black and Hybrid Queens For Sale.

I have 15 hybrid queens for sale at 50c each, three for $1.00. PHILIPP RATH, Oraville, Jackson Co., Ill.

37 more of those nice hybrid queens for sale at 25 cts. THOS. E. ELAM, Mulberry Grove, Ill.

Wanted—to sell a number of mixed queens; 25 cts. each. The lot of 25 at 20 cts. each.
DR. J. W. CRENSHAW, Versailles, Ky.

Ten or 15 hybrid or mismated Italian queens at 25 cts. each, or $2 50 for a dozen. Will mail at once, if wanted. Address W. A. CARTMELL, Crowley, Tex.

I have 12 black queens at 30 cents, or $3.00 for the lot; also 8 fine mismated Italians, 4 bands, raised from imported mother, at 45 cts. Guarantee satisfaction.
GIDEON R. ROUTZAHN, Menallen, Adams Co., Pa.

Taylor's Comb = Leveler.

The saving on a single case of partly filled sections will more than pay for the Handy Comb-Leveler. Only 60 cts., postpaid by mail. Satisfaction guaranteed.

B. TAYLOR, Forestville, Minn.

Non-Swarming Bees!

I have, by careful selection and breeding, developed a strain of Italians that very seldom swarm, though they are excellent honey-gatherers and quite prolific. I sell pure tested queens of last year's raising at $1.00 each; $10.00 per doz. Warranted queens in May, same price; in June and after, 80c each, or $8.00 per dozen.

F. W. LIVINGSTON, Dalton, Ga.

Wants or Exchange Department.

Notices will be inserted under this head at one-half our usual rates. All advertisements intended for this department must not exceed five lines, and you must SAY you want your adv't in this department, or we will not be responsible for errors. You can have the notice as many lines as you please; but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices offering articles for sale, can not be inserted under this head. For such our regular rates of 20 cts. a line will be charged, and they will be put with the regular advertisements. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—100 or less colonies Italian or hybrid bees in good condition, on frames 9⅝ deep by 17⅝ or 13½ inches long, top-bar projecting ⅞ inch.
FRANK MCNAY, Mauston, Wis.

WANTED.—To exchange S. C. White and Brown Leghorn and Pekin duck eggs, for Italian queens, comb foundation, etc. 8-9-10d
J. E. PRYOR, Maple Grove, Madison Co., Iowa.

WANTED.—To exchange a good 6-in. Vandervort foundation-mill for cash or offers.
J. NEBEL & SON, High Hill, Mo.

WANTED.—To exchange bee-supplies for bees by the pound, or colony.
W. H. BRIGHT, Mazeppa, Minn.

WANTED.—To exchange a lot of New Heddon hives, nicely made and painted, for any thing but money. D. S. HALL, So. Cabot, Vt.

WANTED.—To exchange yellow Italian queens, also some of the late varieties of strawberry-plants, for bees or offers. Send for price list.
MRS. OLIVER COLE, Sherburne, Chenango Co., Chenango Valley Apiary. N. Y.

WANTED.—To exchange Italian bees and queens for Root foundation-machine, foot-power printing-press, Barnes' foot-power scroll-saw, or offers.
J. J. HARDY, Lavonia, Ga.

WANTED.—To exchange pea fowls for any thing useful in apiary. B. GEISSLER, Basco, Ill.

WANTED.—To take bees to work on shares.
F. L. WOTTON, Darien, N. Y.

WANTED.—To buy 100 strong colonies of bees in Michigan. Also to exchange a lot of two-story L. hives, with two sets each of worker combs, for bees, honey, or offers. Hives are near Prairie du Chien, Wis. B. WALKER, Evart, Osceola Co., Mich.

WANTED.—To exchange home-bred Carniolan queens, value $1.00 each, for hives, foundation, etc. MRS. FRANK BENTON, Charlton Heights, Md.

WANTED.—To exchange high-grade bicycle for honey or wax. J. A. GREEN, Ottawa, Ill.
9-tfdb

WANTED.—To exchange 6 Heddon hives, full drawn combs, complete, for Brown Leghorn or Wyandotte fowls, eggs, or offers.
9-10d I. J. STRINGHAM, 105 Park Place, New York.

KIND WORDS FROM OUR CUSTOMERS.

GLEANINGS is the last paper I would ever stop taking. JNO. M. HORTEN.
Ellenville, N. Y., Apr 6.

I am using Simplicity and Hoffman frames—the latter self-spacing. I want no other kind.
Sims, Ind. JAMES RUTHERFORD.

OUR TRANSPLANTING-TUBES.

I have to-day moved a lot of strawberry-plants with your transplanting-tubes. I must thank you for the idea; it works like a charm.
CHAS. W. THOMSON.
Hikutara Opotiki, N. Z., Feb. 27.

The goods you shipped us on the 20th arrived in good condition on the 26th. I have been trading with you for about ten years, and I have never had occasion to feel the least dissatisfaction with you in any deal that we have made. You have always been prompt and fair in every way. God bless you.
Rockville, Ind. S. K. FUSAN.

I received the goods in fine condition. The foundation is as nice as a picture. I have bought over $100 worth of goods from the Home of the Honey-bees, and am pleased with all. Every thing is at hand on the shortest notice. I am afraid I am "wed" to GLEANINGS for the rest of my time.
Menallen, Pa. G. R. ROUTZAHN.

STILL FAITHFUL TO THE PLEDGE.

Six years ago I received a smoker of you and pledged myself not to use tobacco any more. I can truly say that I have kept my promise good, and I like to read the Tobacco Column. Let the good work go on. A. B. HOLBROOK.
Point Peninsula, N. Y., Jan. 16.

I have taken GLEANINGS for four years, and find that it grows better every year. If it continues at the same rate for the years to come as it has in the past, surely it will go away beyond "par." I think if all its readers could give their opinions they would say the same thing. W. J. RUSSELL.
Philmont, N. Y., Mar. 25.

DR. WILFORD HALL STILL DOING BUSINESS.

Some time ago I wrote you and asked for a few of the leaflets entitled "A New Method of Treating Disease Without Medicine," which you sent. I should like to have some more if you can furnish them. There is a man in this town selling the secret (?) at $4.00 a head. W. M. EARSOM.
Indianapolis, Ind., Apr. 12.

NOT LOST A COLONY IN 15 YEARS.

I began using the Root chaff hive in 1878, and have used it ever since. I have put as many as 75 colonies into winter quarters, and have yet to lose the first colony in them. I always winter on summer stands. D. S. BASSETT.
Farnumsville, Mass., Mar. 24.

Will you kindly send me a few "Health" pamphlets? This is one of the most Christian-like acts I have ever known—your publishing and distributing gratuitously a pamphlet of so much worth. My shoemaker tried this way of treating piles, and became entirely cured, and gained 17 pounds in a short time. A. E. BROWN.
Batavia, N. Y., Mar. 20.

Mr. Root:—I just want to thank you here this morning, before we have family prayers; and I shall thank the good Father that he put into your heart to write or revise that little book, Tomato Culture. It came just in time, and answered a good many questions that I could not get answered from any other source. GEO. M. KELLOGG.
Pleasant Hill, Mo., Mar. 30.

Inclosed please find $1.00 for one year's subscription for GLEANINGS. I never saw your magazine until a few days ago, and I was very much pleased with your article in Our Homes, March 1. It is all true. This same Dr. Ingersoll said in my hearing, that if all the world would *forgive*, he thought nine-tenths of the chronic diseases would pass away. I hope to have the pleasure of reading many of your editorials. ELIZA L. BROWN.
Burdett, N. Y., Apr. 7.

Now a word in reply to L. A. Dosch, page 236. I have no objection to your giving us more notes on gardening, notes of travel, etc., for they are all interesting to me; but I do object to your stopping the religious talks, exhortations, sermons, etc. Give us all of them you have room for. I think they do a power of good, and that God has and will continue to bless you in so doing. J. G. NANCE.
Gracey, Ky.

WANTED.—To exchange for beeswax, Gregg and Shafer raspberry roots. M. ISBELL,
9-10d Norwich, N. Y.

WANTED.—To exchange or sell 20 colonies Italian bees, lot of honey-boards, bee-hives, etc.; 1 pen Light Brahmas; trio C. Indian games, and trio S. S. Hamburgs. My stock is of the best. Will take in exchange good organ or best offers.
J. C. PROVINS, Masontown, Pa.

Bees and Queens Tested Italian queens, $1.00 each; select tested, $1.50; untested, 60 cts. One 2-frame nucleus, with tested queen, $2.00; with untested queen, $1.50.
STEWART & COOPER,
9-12d *Quebeck, Tenn.*

75 cts. each for untested queens from best imported mothers. **W. C. Frazier, Atlantic, Iowa.**

WIRE NETTING,

SHORT ROLLS, ETC.

We submit below, corrected from last issue, a list of the short rolls and remnants of wire netting that we have just received from the factory. We still have a good supply of 2-inch No. 19 netting 4 feet high, which we still offer at these special prices: 1 roll, $3.60; 5 rolls, $17.50; 10 rolls, $34.00. This you notice is 10c a roll higher than our last offer on this size. We have the 3-inch Nos. 19 and 20, 60 and 72 inches wide only, other widths all sold. We have put the price on the following pieces at the same rate as full rolls, except on the 72 inch, on which we offer an extra 10% discount.

Of 2-inch mesh No. 19 wire, we have the following remnants and short rolls at ⅝c per square foot. The figures at the left give the width in inches, and the other figures give the length of each piece in feet. Multiply this by the width in feet, then take two-thirds of the result to find the price of each piece.

12	65, 75, 109, 117, 123, 130.
24	10, 55, 69, 96, 97, 97, 114, 120, 128, 131, 143, 147.
30	15, 45, 50, 60, 62, 64, 70, 90, 91, 101, 107, 123, 137, 140, 144, 146.
36	9, 16, 18, 18, 19, 25, 26, 38, 40, 40, 40, 46, 49, 50, 50, 50, 53, 54, 55, 56, 58, 58, 64, 73, 73, 73, 74, 75, 82, 83, 84, 84, 87, 87, 90, 90, 92, 94, 96, 96, 96, 99, 100, 100, 100, 100, 100, 100, 100, 102, 102, 102, 105, 105, 109, 110, 111, 114, 115, 116, 118, 120, 120, 122, 124, 124, 125, 125, 128, 129, 129, 130, 138, 142, 142, 143, 143, 144, 144, 147, 147.
42	16, 20, 109, 124, 131.
48	11, 12, 20, 20, 25, 29, 32, 35, 38, 40, 48, 55, 55, 60, 61, 64, 67, 68, 75, 75, 75, 82, 83, 84, 86, 87, 90, 94, 96, 102, 103, 111, 119, 120, 122, 123, 123, 124, 130, 138, 138, 140, 143, 144, 144, 144, 144, 145, 145, 145, 146.
54	72, 88, 88, 143.
60	45, 53, 71, 73, 73, 75, 78, 87, 96, 101, 101, 101, 105, 107, 110, 120, 123, 124, 138, 140, 144, 144, 146, 146.
72	16, 20, 40, 42, 42, 42, 45, 47, 48, 57, 71, 73, 75, 75, 81, 82, 85, 85, 88, 93, 100, 100, 107, 110, 112, 119, 120, 123, 124, 125, 134, 142.

Of 2-inch No. 20 we have the following pieces at three-fifths of a cent per square foot. Arrive at the price in precisely the same way as above, taking three-fifths of the number of feet instead of two-thirds, to get the price in cents.

30	32, 39, 73, 105, 120, 140, 140, 140.
36	12, 20, 22, 36, 38, 39, 56, 57, 66, 68, 79, 81, 86, 88, 100, 100, 100, 110, 119, 120, 122, 126, 128, 128, 132, 134, 136, 138, 140, 141, 144, 145.
42	142, 143.
48	36, 41, 49, 55, 60, 66, 70, 85, 86, 92, 98, 104, 105, 114, 123, 140, 143, 145.
54	145.
60	46, 48, 50, 51, 60, 73, 119, 139, 139.
72	25, 38, 44, 45, 70, 75, 76, 79, 100, 100, 128, 137, 139.

In lots of 5 pieces, any one or assorted kinds, deduct 5%; 10 pieces, 10%; 25 pieces or more, 15%. On the 72-inch netting you may also deduct 10% on single-piece orders; or, in addition to above, on quantity orders. First come, first served. Generally these pieces go off very rapidly, and it may be well to name a second or third choice in case your first may be gone.

A. I. ROOT, MEDINA, O.

FRIENDS,

I have a fine strain of Italian bees, and my apiary will be located six miles from other bees, so perfect mating of queens is assured. Will be pleased to receive your orders. Prices are as follows:

1 untested queen,	$1.00	6 untested queens,	$4.75
3 " "	2.75	12 " "	6.50

Tested queens, each, $1.50.
Safe arrival guaranteed. Address

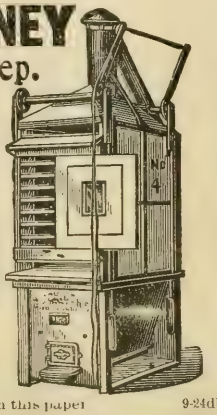
FRANK H. HOWARD,
6-8-10d GARDEN CITY, KANSAS.
Please mention this paper

HUNT'S FOUNDATION FACTORY.

Send for **Free Samples** of the **Finest Foundation** and **Sections** made. Special prices and advantages to dealers in Foundation. Send for my new illustrated **Free Price List** of every thing needed in the apiary. M. H. HUNT, Bell Branch, Mich.
2tfdb Please mention this paper.

MAKE MONEY
While You Sleep.

STAHL'S EXCELSIOR FRUIT DRIER



Evaporates Fruit **DAY and NIGHT.** Catalogue free upon application.
Address
WILLIAM STAHL
EVAPORATOR COMP'Y,
QUINCY, ILL.
Please mention this paper 9-24db

"FLORIDA."—500
LEATHER-BACK ITALIAN QUEENS.

500 young queens ready for delivery April 20 to May 10. Price $10.00 per dozen. Special prices on three dozen or more. Purity and safe arrival guaranteed. The 300 tested queens are all spoken for.
A. F. BROWN, 7tfdb
Huntington, Putnam Co., Florida.

Tested Italian Queens.

Ready April 1, at $1.25 each. Untested, ready April 25; at 65c each; ½-doz., $3.50, or 1 doz., $6.50. Golden Italians from imported mothers; ready, untested, May 1, at 75c each; ½-doz., $4.25, or 1 doz., $8.00. Safe arrival guaranteed. 7-8-9 10d
Stewart Bros., Sparta, Tenn.

BEES QUEENS
SMOKERS, SECTIONS,
COMB FOUNDATION
And all Apiarian Supplies cheap. Send for Catalogue.
E. T. Flanagan, Belleville, Ill.

BEE-HIVES AND SUPPLIES.

Send for catalogue free. Address **SAMUEL JONES.** Highland Park College, Des Moines Iowa. 1-19db

Bee-Hives.

Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue. 23 22db
W. H. PUTNAM, River Falls, Pierce Co., Wis.

THE WHITE PEARL CUCUMBER is a great acquisition as well as a novelty. For full particulars and seed send 25 cents to
6tfdb THOMAS GEDYE, Dayton, La Salle Co., Ill.

Try Duval's Golden 5-Banded Bees.

That have given such general satisfaction. They are the best honey-gatherers, gentle, and not surpassed for beauty. Queens ready now at $1.25; 6 for $6.00. For full particulars and prices send for circular. C. D. DUVAL, SPENCERVILLE, MD.
Please mention this paper. 7tfdb

DO YOU KNOW

That W. H. Bright is selling bee-hives and fixtures at a bargain? If not write for price list.
6-11db W. H. BRIGHT, MAZEPPA, MINN.

Eggs and Plants. Several varieties. Best quality. Any quantity. Finely illustrated catalogue free. Address
GEER BROS., St. Marys, Mo., or H. B. GEER, Nashville, Tenn.
Please mention this paper. 5tfdb

Golden Queens From Texas. My bees can not be surpassed for business, beauty, and gentleness. Safe arrival and satisfaction guaranteed. Untested queens—March, April, and May—$1 each. 50 fine Tested Queens for early orders. $1.50 each. Order early. Send for price list. 5-16db.
J. D. GIVENS, Box 3, Libson, Tex.

For new price list of PURE ITALIAN BEES AND QUEENS, AND WHITE AND BROWN FERRETS, ADDRESS N. A. KNAPP, ROCHESTER, LORAIN CO., O.

Please mention this paper. 4tfdb

Muth's Honey-Extractor.

Square Glass Honey-Jars,
Tin Buckets, Bee-hives.
Honey-Sections, &c., &c.
Perfection Cold-Blast Smokers.

APPLY TO
CHAS. F. MUTH & SON, Cincinnati, O.

Send 10-ct. stamp for "Practical Hints to Bee-keepers."
Please mention this paper.

TAKE NOTICE!

BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH,
14tfdb New London, Wis.

Root's Goods AT ROOT'S PRICES can be had at Des Moines, Iowa. Address Jos. Nysewander.

HATCH CHICKENS BY STEAM
WITH THE IMPROVED
EXCELSIOR INCUBATOR.

Lowest priced First class Hatcher made.

Thousands in Successful Operation.
SIMPLE, PERFECT, and SELF-REGULATING.
Guaranteed to hatch a larger percentage of fertile eggs, at less cost, than any other Incubator.
Send 6c. for Illus. Catalog. Circulars Free.
GEO. H. STAHL, Pat. & Sole Mfr., Quincy, Ill.
Please mention GLEANINGS 22-9db

Italian Queens Tested, $1.25; 6 for $7.00; 12 for $13. Untested, 80 cts.; 6 for $4.50; 12 for $8.00. Extra select breeders, $2.00, or 3 for $5.00. *Safe arrival guaranteed.* Address all orders to

C. F. BECKEY, Manitou Beach,
Lenawee County, Mich.
Reference, Postmaster, Manitou Beach, Mich.

If you want **Italian Queens Now,** send to J. N. Colwick, Norse, Texas, who sends bees and queens on receipt of your cash order. Tested, reared '92, $1.25; 6, $7; 12, $13. Untested, $1; 6, $5; 12, $9. Two-frame nuclei, $1.25. Nuclei, $4. *Drones, Bees* and *Supplies* cheap. Safe arrival guaranteed. Send for circular.

Martin's Prolific Buckwheat

Still continues to **outyield Japanese, largely,** under same conditions, here in Michigan. $1.25 per bushel, or 75 cts. per ½ bushel, sacks included, on board cars here. Address

Wm. Martin, HIGHLAND, Oakland Co., Michigan. 8-11db

☞In responding to this advertisement mention GLEANINGS

I TELL you what, Jones, **Levering Bros.** sell the best goods and at the lowest price of any one I've struck yet. The largest and best equipped

Bee-Hive Factory

in the West. The Dovetailed Hive and New Hoffman self-spacing frame a specialty. Every thing used by practical bee-keepers at wholesale and retail. Send for their free Illustrated Price List, and save money. Supply Dealers, send for their Wholesale List. Address

LEVERING BROS.,
Wiota, Cass Co., Iowa.
3-14db
Please mention this paper.

Bees For Sale Cheap.

My bees having wintered in fine condition, as my old reliable strain of Italians always do, to reduce my stock I will sell 50 colonies at a low price.

Send for 44-page descriptive price list of Bees, Queens, and Supplies. The very best goods at the lowest possible price. 7-tfdb

WM. W. CARY. Colrain, Mass.
Please mention this paper.

Read what J. I. PARENT, of CHARLTON, N. Y., says—"We cut with one of your Combined Machines last winter 50 chaff hives with 7-inch cap, 100 honey-racks, 500 broad frames, 2,000 honey-boxes, and a great deal of other work. This winter we have doubled the amount of bee-hives, etc., to make, and we expect to do it all with this saw. It will do all you say it will." Catalogue and Price List free. Address W. F. & JOHN BARNES, 545 Ruby St., Rockford, Ill.

When more convenient, orders for Barnes' Foot-Power Machinery may be sent to me. A. I. ROOT.
23tfd

BEE-KEEPERS' SUPPLIES. Before placing your order for supplies send for our illustrated catalog. We are making the best goods at lowest prices.
E. H. TRUMPER, Bankers, Mich.

Deduct 3 Cts. per Pound

From our retail prices of foundation, given in our 1893 price list.
M. H. HUNT, - Bell Branch, - Mich.

For Sale at a Bargain.

The entire stock of bees and paraphernalia, all of superior quality and of the most modern and approved kind, of the late Albert Edwards. Enquire of Mrs. Albert Edwards, Box 18, Skaneateles, N. Y.
COOK, NOTTINGHAM & PIERCE.

DON'T MONKEY with cross bees. Our Golden Queens, untested, in May, $1; 3 for $2.50. Tested, $1.50; 3 for $4. Nuclei and full colonies at low figures. Send for price list, supplies, etc.
John Nebel & Son, High Hill, Mo.

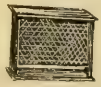
Globe Bee Veil
By Mail for One Dollar.

Five cross-bars are rivited in the centre at the top. These bend down and button to studs on a neck-band. The bars are best light spring steel. The neck-band is hard spring brass. The netting is white with face-piece of black to see through.

It is easily put together and folds compactly in a case, 1x6x7 inches, the whole weighing but 5 ounces. It can be worn over an ordinary hat; fits any head; does not obstruct the vision, and can be worn in bed without discomfort. It is a boon to any one whom flies bother, mosquitos bite, or bees sting.

Send for my Illustrated Catalogue of Supplies for the Apiary. I give a present on all orders of ten dollars and over. The catalogue tells all about it. *T. G. NEWMAN,*
147 SO. WESTERN AV., CHICAGO.

PATENT WIRED COMB FOUNDATION
HAS NO SAG IN BROOD-FRAMES.
THIN FLAT - BOTTOM FOUNDATION
Has No Fish-bone in Surplus Honey.



Being the cleanest is usually worked the quickest of any Foundation made.
J. VAN DEUSEN & SONS,
Sole Manufacturers, 5tfd
Sprout Brook, Montgomery Co., N. Y.

VANDERVORT COMB-FOUNDATION MILLS.
Send for samples and reduced price list.
1tfd **JNO. VANDERVORT, Laceyville, Pa.**

OTTUMWA BEE-HIVE FACTORY.
Bee-keepers, look to your interests. Every thing in the line of bee-supplies constantly on hand. Price list free. **GREGORY BROS. & SON,**
1-23c Ottumwa, Ia. South side.

IMPORTED QUEENS.

In May and June, each $2.00
In July and August, each 1.80
In September and October, each 1.60
E. BIANCONCINI, Bologna, Italy.

BEE-HIVES AND SUPPLIES.
Send for catalogue free. Address **SAMUEL JONES,** Highland Park College, Des Moines, Iowa. 1-19db

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CONVENTION NOTICES

There will be a meeting of the Southeastern Kansas Bee-keepers' Association, June 17, at the apiaries of C. C. Thompson, one mile west of Bronson, Bourbon Co., Kansas. No hotel bills to pay. Everybody invited. J. C. BALCH, Sec.

Black and Hybrid Queens For Sale.

A few brown and hybrid queens for sale at 25 and 35 cts., or 3 for $1.00 and 4 for $1.00.
LOUIS WERNER, B. 389, Edwardsville, Ill.

I have 3 nice hybrid queens to sell June 1. Will be ready to ship by return mail; they are clipped. Price 35c each, or the 3 for $1.00.
CALVIN C. PHELPS, East Windsor Hill, Conn.

Twenty first-class mismated queens at 35c each, or 3 for $1.00; all reared in 1892.
ENOCH ANDERSON, Comanche, Texas.

Twenty-five hybrids, 35c each; 3 for $1.00; 5 blacks, 25c each. Buyer to furnish cage. Send money order on LaFayette, Ga.
J. A. CLEMENTS, Greenbush, Ga.

Kind Words From Our Customers.

THOSE D SECTION CASES.

My order of goods I received all right. Those D section-cases are not only beauties to look at, but a very convenient thing to have in a home apiary, as they are so handy to get to honey at any time.
Elkhart, Ind., May 11. M. D. WENGER.

A WORD OR TWO TO MR. A. I. ROOT.

Dear Sir:—Do not, under any circumstances, as long as you have strength, allow any one to influence you in the course you are pursuing in GLEANINGS. I always begin at the back part, and read toward the front part. Allow me to put it thus: You furnish the leaven; Ernest the pudding; Rambler the sauce, and Miller spice enough for the whole lot. ALBERT WITTMEYER.
Emison, Ind., Mar. 27.

A KIND WORD FOR THE HEALTH PAMPHLETS.

I have received one of your pamphlets, "A New Method of Treating Disease Without Medicine." It was sent me by my brother from Florida. I have always wanted the treatment, but would not buy a secret and bind myself to keep it. I rejoice in this exposure. I am a minister of the gospel, and want some of these pamphlets to give to those who need them. Send me at least 100. I will not waste any of them. J. R. LETHERMAN.
Conway Springs, Kan., Apr. 29.

Thank you, friend L. I only wish there were more ministers of the gospel who feel as I do, that they can not consistently either buy or sell a secret—especially a secret that bids fair to be of benefit to their fellow-men.

NOT ONLY A KIND WORD, BUT A KIND INVITATION ALONG WITH IT.

Mr. Root:—I have just been reading your interesting account of your visit to Mr. Terry's, and the many things you saw there to instruct and "amuse." Now, I think it hardly fair for you to go to see Mr. Terry so much, and give me the go-by. If you will come and see me I will show you a steam-excavator which is throwing 500 cubic yards of clay every ten hours, and you will not get a bit of mud on your shoes or pants. We have strawberries as large as those you ate, and they are canned in maple sugar, which makes the syrup ever so much richer and nicer; and you shall have all of it that you think your principles will warrant you in indulging in. Then my wife will play you any number of tunes on the piano, and then you shall see all that goes in carrying on a dairy farm on the last idea; and to make you feel entirely at home I will borrow a hive of bees. We have other things that may be of interest to you, that will come up later. Now, what say you to these attractions, independent of a hearty greeting, which I can assure you is in waiting for your coming?
Aurora Station, O. JOHN GOULD.

[Perhaps I should explain to our readers that the writer of the above is one of the trio mentioned by Thomas Shaw on page 134 of our issue for Feb. 15; in other words, he is the man who has built up a fine library by saving the money which he used to spend for tobacco. Somebody has said—I can not remember who just now—that it is a little singular that three such men as Chamberlain, Terry, and Gould, should happen to grow up in the same neighborhood. While Terry raises potatoes, and Chamberlain teaches underdraining, Gould is, if I am correct, the best authority we have on the matter of dairying. And now a word to friend Gould himself.

HOLDING TOO LONG TO ONE SET OF IDEAS.

Brother G., you need not go to the trouble of borrowing that hive of bees; and perhaps I should say something just here that, in justice to our readers, I ought to have said long ago. An incident of our trip to California brings it to mind. While traveling somewhere in the vicinity of the Rockies, all at once Prof. Cook remarked:

"Look here, Mr. Root; I want to ask you one question."

Of course, I told him to ask any question he saw fit. Said he:

"You were once so full of the subject of bees that you could neither think nor talk much about any thing else. Of late years, and especially within the last few days, it has seemed to me as if you rather avoided the subject than otherwise. What has brought it about?"

"I am glad to answer you. For many long years, as you say, I never tired in talking about and investigating and studying the honey-bee; and I used to think I should never get weary of that one subject. Finally, however, when my health began to fail, I discovered that I turned almost involuntarily to something else as a relief—a rest, or change; but when business, and a desire to help others who wanted to know, continued to hold me down to that subject, it began at times to be almost painful. I went into other things expecting and rather hoping that a little rest from that one subject would throw off this feeling. It has done so to some extent; but, to tell the truth, I have, at the present time, very little to do with the bees. The bee-keeper of our establishment is, at present, Ernest. Growing potatoes and draining the land, riding the wheel, and even looking into the wonderful progress that has been made in your line of business, attracts me much more than bee culture. Sometimes I have felt sad about it; and then I have thought that, perhaps, there was a sort of providence in it; and I do believe that it is God's will that, while we look after our own industry, we should also avoid settling down into one narrow line of work too long at a time."

After I explained to friend Cook as above, he astonished me by coming over to where I sat, and putting out his hand. When I looked up in surprise for an explanation he said something like this:

"Mr. Root, I rather suspected something of what you have told us; and I want to tell you that my experience is much like yours. I have felt as if I could not stand it unless I had some sort of relief from duties that have been wearing, month after month and year after year, on the same set of nerves, and in the same line of work."

Perhaps he did not say it just as I have put it, but it was something in that line. It is true, there is such a thing as changing about from one thing to another before one has had time to accomplish any thing anywhere; but there is also an opposite extreme to be avoided.]

HONEY COLUMN.

CITY MARKETS.

ALBANY.—*Honey.*—The honey season is now virtually over, and we have scarcely any of either comb or extracted on hand. Grocers that bought too much and are afraid to carry it over are now turning their stock over to us; but it don't amount too much, and we can easily work it off.
May 23. CHAS. MCCULLOCH & CO.,
393, 395, and 397 Broadway, Albany, N. Y.

CINCINNATI.—*Honey.*—There is a fair demand for extracted honey, at 6@8c on arrival, with a small supply on the market. Prices of comb honey are nominal, at 12@15c for best white, with no choice comb honey on the market. Demand for beeswax is fair, with a fair supply at 22@25c for good to choice yellow CHAS. F. MUTH & SON,
May 24. Cincinnati, O.

BUFFALO.—*Honey.*—The stock in market is pretty well cleaned up with the exception of some odds and ends. It is moving off very slowly at irregular prices. A liberal amount of fancy honey could be placed here at 17@18c; choice, 14@15; common, etc., ranging from 8@12c. Beeswax, 28@30c; fair to good, 22@25c. BATTERSON & CO.,
May 18. Buffalo, N. Y.

KANSAS CITY.—*Honey.*—The demand is fair for comb, supply nearly cleaned up. One-pound comb, white, 15@16; amber, 10@14; extracted, 6@7½. *Beeswax*, 22@25. CLEMONS-MASON COM. CO.,
May 17. Kansas City, Mo.

CHICAGO.—*Honey.*—Market dull, but offerings are not large of the best grades of comb, which brings about 17c; dark grades slow at 12@13c; extracted sells about as fast as it arrives, at from 6@9c. Beeswax, 25c. R. A. BURNETT & CO.,
May 18. 161 So. Water St., Chicago, Ill.

CLEVELAND.—*Honey.*—The demand for honey seems to be somewhat firmer, but prices are about the same as in last issue. Beeswax is in fair demand at 30c. WILLIAMS BROS.,
May 18. 80 & 82 Broadway, Cleveland, O.

BOSTON.—*Honey.*—One-pound sections selling from 12@15c: selling very slow, only a small amount on hand. Extracted, 8@10, fair demand. No beeswax on hand. BLAKE & RIPLEY,
May 19. Boston, Mass.

SAN FRANCISCO.—*Honey.*—New crop extracted honey commencing to arrive in small quantities, and same is of very good quality. Stocks here are still light, and we quote light amber, 7½@8c; amber, 6@7. Of comb honey our market is almost entirely bare. SCHACHT, LEMCKE & STEINER,
May 13. San Francisco, Cal.

ALBANY.—*Honey.*—Market quiet, with no stock and few sales, as usual in berry season. Beeswax scarce, and wanted at high price, 28@30.
May 20. H. R. WRIGHT,
326, 328, 330, Broadway, Albany, N. Y.

ST. LOUIS.—*Honey.*—Extracted honey arriving more freely. Fair demand. Comb, 10@12; extracted, 5½@6½. Prime beeswax, 24½c.
May 19. D. G. TUTT GROCER CO.,
St. Louis, Mo.

DETROIT.—*Honey.*—A little first-class comb honey would sell for 15c; ordinary lots from 11@13c; extracted, 7@8. Beeswax, 25@26. M. H. HUNT,
May 20. Bell Branch, Mich.

KANSAS CITY.—*Honey.*—All of the old honey crop is cleaned up. We look for the new honey about the middle of July. HAMBLIN & BEARSS,
May 19. Kansas City, Mo.

ROOT'S HIVES CHEAP.

New Dovetailed, nailed up, complete for comb honey, only $1.00 each.
A. F. McADAMS, COLUMBUS GROVE, O.

BUFFALO, N. Y. Unsurpassed Honey Market. BATTERSON & CO. Responsible, Reliable, Commission Merchants. 18tfdb **and Prompt.**

Muth's Honey

In packages of ¼, ½, 1, and 5 lbs.,
25c. per lb.
If sent by mail, add 17c for every lb.

C. F. Muth & Son,
976-978 Centr. Ave.,
CINCINNATI, OHIO.

Caramels.

BUGGIES at ½ Price
CARTS & HARNESS
$90 Top Buggy..$37
$95 Phaeton.....$54
4 Pass. Top Surrey.$47
$50 Road Wagon $25
$16 Road Cart..$8.25
Buggy Harness$3.85
$10 Buggy " $4.75
$30 Team " $12.50
Morgan Saddle$1.65
We Cut the PRICES and outsell ALL competitors. Buy of factory and save Middleman's profit. Catalogue Free.
U. S. BUGGY & CART CO.
55 S. Lawrence St., Cincinnati, O.
7-12db Please mention GLEANINGS.

June 25th.

By my system of dequeening at the opening of a harvest, I shall have *300 tested queens* of the leather-back strain of Italians for delivery *about June 25.* Prices, 75c each; $7.50 per dozen. All young and prolific; none over one year old. *Book your orders now;* pay when queens arrive. None will be sent out at these prices before June 20, nor after July 10. First come, first served.
A. F. BROWN, Box 16, New Smyrna, Fla.
Formerly of Huntington, Fla.

IF YOU WANT BEES

that will just "roll" in the honey, try Moore's strain of Italians, the result of 14 years' careful breeding. Prices in June: Warranted queens, $1.00 each; 3 for $2.50. Strong 3-frame nucleus, with warranted queen, $3.00. Safe arrival and satisfaction guaranteed. Those who have never dealt with me, I refer to A. I. Root, who has purchased of me over 600 queens. Circular free.
J. P. MOORE,
11-12d *Morgan, Pendleton Co., Ky.*

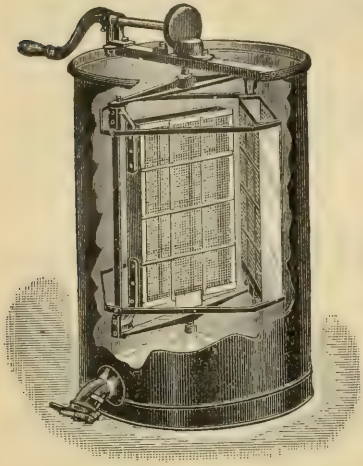
Sections Still Lower!

First-class 8-to-the-foot one-piece white-poplar sections; also 7-to-the-foot and 1⅞ basswood, all 4¼x4¼ in. square. Prices, 500 either kind, $1.50; 1000, $2.75; 2000, $5.25; 3000 to 5000, $2.50 per M; 5000 or more, $2.40 per M. Satisfaction guaranteed. Samples free. Please give size you want. Address
O. H. TOWNSEND, Alamo, Kalamazoo Co., Mich.
Reference, Michigan National Bank, of Kalamazoo.

WANTED.—To exchange for wax or offers, shallow extracting-combs, 40c per set, including supers for 8-f. L. hives. Wood-zinc honey-boards, 12c.
H. D. BURRELL, Bangor, Van Buren Co., Mich.

WANTED.—To sell about 200 colonies of bees—guarantee safe arrival to Colorado, or similar distance. E. SANDFORD, Nokomis, Ill.

A Grand Success.



New Cowan Reversible Honey-Extractor.

May be Reversed without Stopping the Machine.

Strong, well made in every respect, light, and of convenient size. The can is but little larger than that of the Novice. The gear is beveled, and covered by an iron shield, and the crank outside the can. Frank McNay, of Mauston, Wis., a bee-keeper who produces tons and tons of extracted honey, says of it:

After carefully examining and trying the Cowan extractor, I have failed to find a weak part, and I do not hesitate to say that it is the best extractor made, both in regard to convenience and durability, and I shall replace all of my five machines with the Cowan as soon as possible.

It is indorsed also by J. F. McIntyre, an extensive extracted-honey producer in California: by W. Z. Hutchinson, Dr. C. C. Miller, Dr. A. B. Mason, and others.

Price all Complete, Japanned and Lettered, for L. Frame, $10.

A. I. ROOT, MEDINA, OHIO.

What Stood the Test?

Hilton's Improved Chaff Hives have for the past 15 years. Send for his free illustrated catalogue of every thing needed in the apiary, of

Best Quality and Lowest Prices.

One hundred colonies of Bees for sale. Write for prices, and address

GEO. E. HILTON, Fremont, Mich.

8-13db Please mention this paper

Friends,

I am now ready with those nice Italian queens, which I will sell at $1.00 for untested; tested, $1.50. Bees by the lb., $1.00; 1-frame nucleus, $1.25; 2-frame, $2.25.

Mrs. A. A. Simpson, Swarts, Pa.

---

500 HIGH-GRADE BICYCLES for sale, cushion and pneumatic tires. Big discount to agents. Send for catalog. ROBERT B GEDYE, La Salle, Illinois.

READY AGAIN!

My location enables me to rear those nice Golden Queens, by Doolittle's method, as cheaply now as at any time in the North. Untested, 75c; 6 for $4.00; 12, $7.50. Last year's tested, $1.25; select, $1.75; breeder, $2.50. Safe arrival and satisfaction guaranteed.

J. B. CASE, Port Orange, Vol. Co., Fla. 5tfdb

I have one of the choicest flocks of

BROWN LEGHORNS IN THE STATE.

Keep no other kind. Eggs, 75c per 15; $1.25 per 30.

8tfdb B. G. SCOTHAN, Rogersville, Mich.

The Golden Beauties.

My 5-banded Italian queens can not be surpassed for honey-gathering, gentleness, prolificness, and beauty. Untested, 75c each; tested, $1.00; breeding queens, $2.50 to $3.00. We warrant our queens purely mated. On orders for 5 or over, 10 per cent discount. Safe arrival and satisfaction guaranteed.

Address C. B. Bankston, Chrisman, Tex. 8tfdb

---

50 Colonies of Italian Bees

in ten-frame Langstroth, and eight-frame A. I. Root's Dovetailed hives, bees in tip-top condition. Safe arrival guaranteed. JOHN GRANT,

8-11db Batavia, Clermont Co., Ohio.

☞In responding to this advertisement mention GLEANINGS.

Good News.

For years I have not been able to dress myself; and for many weeks have had to be lifted out in my bed and chair. Under the pressure of necessity I have invented a device by which a child can put me to bed or take me up. The device can be used in any room or part of a room. A practical, simple, cheap device. Invalids will do well to correspond. I can help you. You can help me. Address

A. BEESON, Loveland, Col.

WE OFFER

COMB FOUNDATION

WHOLESALE AND RETAIL,

AT VERY LOW PRICES.

Satisfaction and all work guaranteed.

Price List and **samples** will be ready before the next issue.

Send for them.

Prices will range from 36 to 56 cents per lb., f. o. b.

BEESWAX WANTED. Write for prices.

W. J. FINCH, JR.,

31 E. Monroe St., 5-10db **Springfield, Ill.**

☞In responding to this advertisement mention GLEANINGS.

SELLING OUT! Chaff Hives, etc., very cheap. F. H. & E. H. DEWEY, 55 Mechanic St., Westfield, Mass. 8-12db

---

Root's Goods for the West.

Address Jos. Nysewander, Des Moines, Ia.

EARLY QUEENS.

All Italians. 3 and 5 Banded.	May	June and after
1 untested queen	$1 00	75
6 untested queens	5 00	4 00
1 tested queen	1 50	1 50
3 tested queens	4 00	4 00
Select tested	2 50	2 50

Two-frame nuclei with any queen, $1.50 each extra. Safe arrival guaranteed. 9-12db

W. J. ELLISON, Catchall, Sumter Co., S. C.

"You Push the Slide; Nature Does the Rest."

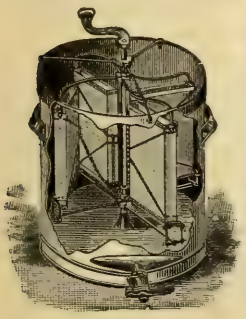
The first *perfect* and *practical non-swarming* plan that has ever been brought to completion is *found at last.* Nothing like it ever done. I worked the plan on *100 colonies* last year (1892), and I do not make any statements at random in my circular, as each point has been fully tested. Tells you all about it. No hunting or caging queens, cutting cells, moving hives, or even opening the brood-chambers at all during the honey season, etc., etc., *and more honey with no swarming.* Get into line and "keep up with the procession," or you'll get left. The device will be put on the market within the reach of all; or, if your dealer does not supply them yet, they may be ordered of me by express or freight at the following prices, complete: 75 cts. each; $5.00 per 10; $40.00 per 100. By mail, 35 cts. extra. As one device *works two hives,* at ten rates the cost is only 25 cts. per hive. Be sure to send for circular, as this plan is almost too good to believe its being true.

H. P. LANGDON, East Constable, N. Y.

10tfdb Please mention this paper.

Stanley Automatic Reversing

HONEY-EXTRACTOR.



We still have in stock eight or nine 2 and 4 frame Stanley extractors, bought of Mr. Newcomb when we leased the right to make these machines. To work them off quickly, and give us a chance to put out machines of our own make, we offer these machines as long as they last, at one-third off old prices. We will sell the two-frame machines as they are for $8.00; the 4-frame for $12.00. They are crated ready for shipment, with crank direct on the center-shaft. We will attach our new bevel gear, as shown on page 14 of our catalogue, for $3.00 each extra.

A. I. ROOT, Medina, Ohio.

Leininger Brothers WILL SELL **Italian Queens**

And Nuclei Cheap. Send for Prices.

Fort Jennings, Ohio. 7tfdb

GOLDEN CARNIOLANS

Absolutely a Faultless Strain of Bees.

One queen	$1 00	Leather-colored Italians same prices as Golden Carniolans. Satisfaction guaranteed. 10tfdb
Three "	2 75	
Six "	5 50	
Twelve "	10 00	

HENRY ALLEY, Wenham, Mass.

WANTED — Your address

on a postal card, to receive the *Am. Apiculturist* 9-tfdb *FREE THREE MONTHS.*

Address *H. ALLEY, Wenham, Mass.*

Responding to this advertisement mention GLEANINGS.

Central Bee-Hive Factory

And Bee-keepers' Supply-house of Illinois. Write for Catalogue for 1893. Address

F. N. JOHNSON, P. O. Box 137,

8-13bd **Knoxville, Knox Co., Illinois.**

A large number of fine queens on hand; yellow and prolific; ready April 15th; warranted queens, $1; 6 for $4.50; select tested, yellow to the tips, suitable for breeders, each, $2. Reference, A. I. Root. 3tfdb

W. H. LAWS, Lavaca, Seb. Co., Ark.

Bees

By the Pound, Nucleus, or Colony.

Address **OLIVER FOSTER,**

8-tfdb **Mt. Vernon, Linn Co., Iowa.**

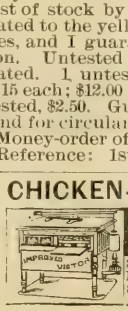
Beautiful Golden Queens.

My five-banded Italians are bred from the very best of stock by Doolittle's improved methods, and mated to the yellowest of drones from selected colonies, and I guarantee them to give entire satisfaction. Untested queens are all warranted purely mated. 1 untested queen, March, April, and May, $1.15 each; $12.00 per doz. Tested, $1.50 each. Select Tested, $2.50. Guarantee prompt and safe delivery. Send for circular. **W. P. CROSSMAN,**

Money-order office. **Ballinger, Tex.**

Reference: 1st Nat. Bank of Ballinger. 5tfdb

CHICKEN-HATCHING BY STEAM

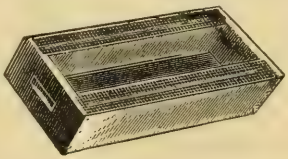


IMPROVED VICTOR INCUBATOR.

Simple, easy of operation, self-regulating, reliable, fully guaranteed. Send 4c. for illus. Catalogue. Geo. Ertel & Co., Mfrs. Quincy, Ill. U.S.A.

A. E. MANUM'S LEATHER-COLORED ITALIAN QUEENS

Are superior to all others for business, is the verdict of those who have them. PRICES: one untested, $1; six, $5.50; twelve, $10.00. Tested, $1.50 each. Selected for breeding, $2.50 each. One yearling, tested, *in June only,* $1.00; six, $5.50; twelve, $10.00.



THE MANUM FEEDER.

Models of Manum's new "Rapid" feeder with, full printed directions how to make, and what, when, and how to feed for best results, $1.00 by mail, postage paid. Descriptive catalogue mailed free on application. 5-12db

A. E. MANUM, Bristol, Vt.

SUPPLIES.

Large illustrated catalogue free; or send 10c in stamps for *THE BUSY BEE,* a book telling how to manage them.

WALTER S. POUDER, Indianapolis, Ind.

4-12db 175 E. Walnut Street.

BUY your **HIVES** where lumber is cheapest. That's at LeSueur, Minn. Catalogue free.

5tfdb **F. C. ERKEL.**

Eastern Supply House.

We furnish everything used in the apiary, and at bottom prices. Illustrated circular free.

I. J. STRINGHAM, 105 Park Place, N. Y.

21-20db Please mention this paper.

Cash for Beeswax!

Will pay 23c per lb. cash, or 26c in trade for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 29c per lb., or 33c for *best selected wax.*

Unless you put your name *on the box,* and notify us by mail of amount sent, I can not hold myself responsible for mistakes. It will not pay as a general thing to send wax by *express.*

A. I. ROOT, Medina, Ohio.

The Bee=keepers' Review

For 1893 and a fine tested Italian queen, of last year's rearing, for $1.75. Either alone, $1.00. For $2.00, the *Review*, the queen, and the 50-ct. book, "Advanced Bee Culture," will be sent.

W. Z. HUTCHINSON, Flint, Mich.

P. S.—If not acquainted with the *Review*, send ten cents for three late but different issues.

Free! 200-Page Bee-Book!

TO EVERY NEW YEARLY SUBSCRIBER TO

The Weekly American Bee Journal

32 pages, $1.00 a year. Send for FREE Sample Copy with full description of Book.

Address, GEORGE W. YORK & CO., 56 Fifth Ave., CHICAGO, ILL.

TO NEW SUBSCRIBERS: THE JOURNAL ALONE SENT FOR 3 MONTHS FOR 20 CENTS.

Great Reduction.

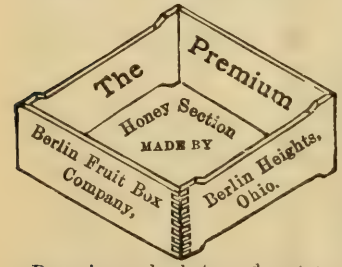
Sections at greatly reduced prices. Hives, Shipping - cases, etc., at Bed-Rock Prices. Write for free Illustrated Catalogue and Price List.

G. B. Lewis Co.,

Watertown, - - - Wis.

1tfdb Please mention this paper

Great Reduction in Prices.



We now sell our premium No. 1 one-piece sections at $2.50 per M; No. 2 at $1.50. *A liberal discount* will be made on larger orders. Dealers would do well to get our figures on sections and wood separators before buying elsewhere.

Berry boxes, baskets, and crates of the most approved styles at the lowest rates. Send for catalogue with *reduced prices*. Address as in cut above. Mention this paper. 8-12db

In writing advertisers please mention this paper

Pure Golden Italian Queens.

Reared from imported mothers, 75 cts. each, or ½ doz. for $4.25; doz., $8.00. Safe arrival guaranteed.

STEWART BROS., Sparta, Tenn.

75 cts. each for untested queens from best imported mothers. W. C. Frazier, Atlantic, Iowa.

Notice

What JENNIE ATCHLEY Says

about my new ***Drone-Trap*** and queen-cages:

April 22, 1893.

A. A. Weaver, Warrensburg, Mo.

Dear Sir:—Your drone-trap at hand, and we had an excellent opportunity to test it to-day. The drones were flying by the hundreds. We attached the trap to a hive, and in a few minutes had the satisfaction of seeing it chuck full of drones. Yes, it caught the very last drone that attempted to leave the hive. Now, that drone-catcher of yours is the best thing of the kind I ever saw, and ought to be in the hands of every bee-keeper. Your queen-cages prove to be the best I have ever used, and for workmanship can not be excelled.

Very truly yours, JENNIE ATCHLEY.

Sample drone-trap, by mail, 60c; sample queen-cage, 5c. Send for prices on quantities; also price list of bee-keepers' supplies and Italian queens.

9-tfdb ***A. A. WEAVER, WARRENSBURG, MO.***

POLISHED

One-Piece Sections Our Specialty.

I can fill orders promptly for any width at $2.50 per M. from factory at Wauzeka, Wis., or at $2.85 shipped from Owosso, or Evart, Mich. No. 1 planer-sawed, 25 cts. less per M. Special prices on quantity lots. Other supplies kept.

7tfdb ***B. WALKER, EVART, MICH.***

Have you Seen our Big Blue Catalogue for **1893**! **Seventy** illustrated pages. Sent **Free** to any bee-keeper. **BEE-SUPPLIES** at retail and wholesale. **Everything** used in the apiary. Greatest variety and **Largest** stock in the West. 2-12db

E. Kretchmer, Red Oak, Iowa.

For Sale At a bargain, 75 colonies of Italian bees, all on the L. S. frame; 8 and 10 frame hives, in good condition. In a never failing locality; with fixtures. Address

Louis Werner, Edwardsville, Ill.

WORLD'S FAIR—ROOMS TO LET.

Six nicely furnished rooms by week or month during World's Fair, near Exposition grounds. Address MRS. J. E. M. CONNELL, No. 6010 Union Ave., Englewood, Ill.

PORTER BEE ESCAPES

are used and pronounced a great labor-saving implement by **Chas. Dadant & Son, Prof. A. J. Cook, Chas. F. Muth, Jno. S. Reese, J. H. Martin, John Andrews, F. A. Gemmell, Wm. McEvoy, A. F. Brown, Thomas Pierce,** and many other prominent bee-keepers. Descriptive circular and testimonials mailed free. **PRICES**:—Each, post-paid, with directions, 20c.; per doz., $2.25. *Return them and get your money back after trial if not satisfied.* For sale by dealers. Address **R. & E. C. PORTER LEWISTOWN, ILL.**

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
PUBLISHED BY A. I. ROOT
$1.00 PER YEAR MEDINA OHIO

Vol. XXI. JUNE 1, 1893. No. 11.

STRAY STRAWS

FROM DR. C. C. MILLER.

THE WORST SPRING here in 30 years.

CHICAGO is the place; October 11, 12, 13, the time.

IF ROBBERS get started on a queenless colony, giving a queen will be a big help.

YOUR WIFE shouldn't wear her best clothes to the World's Fair. Take something that won't show dirt.

A FEAR OF WANT on the part of the bees is about as disastrous as an actual want.—*R. L. Taylor, in Review.*

FIFTY PER CENT increase in the crop of cucumbers is reported by Dr. Hicks, in *A. B. J.*, as the result of keeping bees near them.

WILL BEES REALLY build up faster with daily feeding in spring than without it, providing *abundant* stores are in the hive?

WHEN BEES will not defend themselves against robbers, R. L. Taylor says, in *Review*, the best way is to let robbers and robbed swap places.

THE BEE-KEEPERS' SHOW at the World's Fair is in the southeast corner of the gallery of the Agricultural Building. A. I. Root's case is at the extreme corner.

"BOTTOM-BOARD," S. T. Pettit thinks, is not so good a name as "floor." The latter has a decided advantage as to length. Has the longer name any advantage?

JUST AS I FEARED. Although my loss in cellar was light, the loss from this terrible spring has been heavy, so that I expect to reach a total loss of about 40 per cent by June 1.

THAT BOY ZED, of Jake Smith, is a right smart youngster, but I venture the guess that his honey-peddling machine was hatched in the brain of a certain engraver in Cleveland.

MR. EDITOR, what makes you print such aggravating things from Rambler? Look at that $1.50 to $2.00 per pound for honey. Think of $75 to $200 for the yield of a single colony!

NO FLYING weather for bees for weeks till May 19, when it suddenly changed to summer, and fruit-bloom and dandelions opened all at once, dandelions having tried to open weeks before.

A HIVE-COVER made of two boards, joined by a V-shaped strip of tin, warps as bad as or worse than a cover made of a single wide board, probably because the wide board contains better lumber.

"ASK YOUR BEES questions, and you will get honest answers," says John F. Gates, in *C. B. J.* The only trouble is to know just *what* the question was—that is, all the conditions put with it.

EDITOR YORK thinks if the honey-yield comes up to the improved apicultural journalism of to-day, all will be well. Yes, if it should turn out so, bee-keepers could have new overcoats for next winter.

LAWYER MOORE is right; don't lie about yourself by saying guilty when you're not guilty, any more than you would charge guilt upon some one else. Stick to the truth, no matter what it costs you.

RATH FUER ANFAENGER heads an item in that progressive paper, the *Progressive Bee-keeper*, which means that, hereafter, there will be a department of advice for beginners, printed in German. Good idea, and may pay.

IT MAY BE WELL to know that, as a general rule, a 16-foot board is better lumber than a 12-foot one. Good lumber works into longer boards than poor—at least, dealers have told me so, and some years of observation corroborates it.

FERTILIZED QUEENS, Simmins says, never fight. Long ago I reported in GLEANINGS a case in which two laying queens remained for days in the same cage, and afterward successfully headed colonies. I never saw two laying queens show fight. Did you?

IS THE INSTINCT for storing pollen the same as that for storing honey? Will bees continue to store pollen as they do honey, just so long as they can get it and find room for it, or will they let up on gathering when well stocked? Can any one give an answer with proof?

DICTIONARIES have not the right to make words—only to give and define those already in use. Will the friends who suggest new terms in bee-language please remember this? Urge all the improvements you can in our nomenclature, and get them into use, then the dictionaries, if they are alive, will be obliged to introduce them.

SOME TIME AGO I mentioned in GLEANINGS that a queen was better received if hungry. Simmins has reduced the thing to a system, which he says rarely fails, no matter how long or short a time the colony has been queenless, or whether it has brood or queen-cells or not. After fasting half an hour, run the queen down from the top of the hive, after dark, and don't disturb for two days.

Simmins has made a decided improvement in his non-swarming plan. Formerly the plan was to have the bees always building comb between the brood-nest and the entrance, as fast as the bees built the comb, cutting it out and fitting it into sections. Now he puts sections under instead of brood-combs, then raises the sections when well started.

Hutchinson disputes Simmins' idea that comb honey will always be a luxury, and extracted come into general use. Hutchinson says comb honey is nearer a staple than extracted, the latter competing with cheap syrups. But will not that very competition, by bringing down the price, do just so much toward making extracted a staple?

The New York exhibit of honey at the World's Fair proves clearly that comb honey can be kept from one year to another in good condition. It can be seen there by the ton just as white and nice as when taken from the hives. The only secret about it is that it was kept in a room heated all winter to about 50 degrees. In a flush season, with very low prices, it might pay to hold honey over in this way.

CELLAR WINTERING.

THE RESULTS OF SOME INTERESTING AND VALUABLE EXPERIMENTS MADE BY B. TAYLOR; UPWARD VENTILATION A SUCCESS; SEALED COVERS A FAILURE.

Editor Gleanings:—Nearly all apiarists agree that successful wintering is one of the most important questions connected with bee-keeping. There is more loss from failure in wintering than from all other causes combined. There has always been much difference of opinion among leading lights as to the real cause of bad wintering. Some apiarists have laid the cause to a lack of ventilation in wintering-cellars; others, to the excessive supply of pollen; others, to poor food, honey-dew, late fall honey, too much ventilation of hives, too little ventilation; and many other fancies have been brought forward. Lately, sealed covers have been suggested as a great remedy for winter troubles. Books have been printed and widely advertised, recommending this new discovery. This new theory was from the first, to my mind, contrary to both theory and practical experience; yet I gave it a thorough trial, only to meet with severe loss.

In the fall of 1892 I resolved to begin a series of more careful experiments in regard to the part that the preparation of hives themselves plays in wintering. I had what I now have reason to believe to be a fact—a wintering-cellar as nearly perfect as present knowledge permits; hence any cause of loss would be in the condition of the colonies and hives themselves, and not in the place in which they were kept; so I resolved to try several plans of preparing the hives for winter.

No. 1.—I prepared 25 hives as follows, and placed them in one division of my new cellar. I gave each colony two sections of my double hive. I removed two combs from each section, leaving eight in each. These eight combs were spread to fill the ten frame hive. The hives were raised two inches from the bottom-board. When all was quiet, a square of light cotton cloth was spread over each hive, and on top of this was placed a shallow box three inches deep, full of sawdust. The entrances at the bottom were left open the entire width of the hive, front and rear. Now, remember, these swarms were each left on sixteen combs in two sections of a shallow hive, thus making very roomy quarters. Each had large stores of sealed honey, mostly in upper sections. The temperature was about 42°, without 2° of variation.

No. 2.—I next prepared 25 hives, exactly as in No. 1, except that the solid hive-covers were left on, and then four thin slips of wood, $\frac{1}{25}$ of an inch thick, were put under each corner of the cover, raising it slightly from the hive-top and leaving a little ventilating crevice on all sides of the top of the hives. They were placed in the same apartment of the cellar as No. 1. In the other apartment of the cellar 20 hives were placed, with sealed covers on, just as the bees left them. The covers were ⅞ solid boards, and the hives were full, brood-chambers holding 10 combs, 8 x 13½ inches inside of frames. They were raised 2 inches from the bottom-boards. They were good swarms, with plenty of stores; were put in at the same time as the others, and kept at the same temperature, 42°, as the others.

April 6, in an article for the *Bee-keepers' Review*, I wrote, in regard to groups Nos. 1 and 2:

> These bees have remained quieter the entire winter than any like quantity I ever knew, and I examined them to-day (April 6th) and the colonies are all alive and *absolutely quiet*. There is not a speck of dysentery on one of the white hives, and there have been fewer dead bees on the cellar bottom than I ever had from a like number of colonies. These bees are still in the cellar, and at present it looks like a case of *perfect wintering;* but it does not prove that they might not have wintered equally well without covers of any kind, and with less work in preparing.

At the time of writing the above there was a day or so of fine weather, and I commenced to move my bees from the cellar to the summer stands; but I had the good luck to get out only 10 swarms the first afternoon. Next morning the weather had changed to cold and stormy, and continued so until the 20th, when snow fell to the depth of 15 inches, and from that date until May 8th there was not a day in which I could safely put out the bees. Let me here say, that, in my article of April 6, I reported, in mentioning the 20 colonies with sealed covers, "They have been more restless than those covered with porous covers. The hives are damp and unsatisfactory, and more bees have flown to the cellar floor." Early in May I became alarmed for the safety of my bees. The weather continued so cold I dared not put them out, and I found several dead; but the colonies continued very quiet, without the least sign of dysentery, and on May 6th I began to put them out. As those lots, Nos. 1 and 2, were very quiet, I began in the south half of my cellar, in which the 20 colonies were. There were some 50 colonies in this part also, in double hives of my old double brood-chamber hives, with combs only 4½ inches deep. The covers on these were raised slightly with thin slips of wood, like group No. 2. We found these bees in good condition; only about 10 per cent were dead from starvation.

We next went to the 20 hives with sealed covers, and 19 out of the 20 were dead. The hives contained stores in plenty; but the hives and combs were soaked with water, and the combs nearly rotten with mold. Nearly the whole colony of dead bees was on the bottom-boards, in a stinking, disgusting mass. The weather continued fair, and on May 8th we began to remove group No. 1 to the new house-apiary. These colonies had about 5 per cent loss by starvation; but the bulk of them, seeing they had been confined without a flight for six months and four days, were all that one could wish. The hives and combs were dry and clean. Many of the bottom-boards were nearly as clean as in summer; the bees were bright,

and so still that we carried all of the 24 colonies, that I put into the house, without closing the wide entrance in both front and rear, and, I believe, without a single bee taking wing; and some colonies remained several hours before they found that they were at liberty and flew out.

We found group 2, with board covers raised slightly, in about the same condition as No. 1, except, I must confess, in just a little better condition, taken as a whole. The hives, combs, and bees, were all one could ask; and it speaks volumes for top ventilation. I never removed all these hives from the cellar until the 12th of May, but found the swarms all right at that date. This seems too late in the season to expect good results; but as the willows, boxwoods, and soft maples are just coming into bloom, and as clover is booming on every hand, the people at the Forestville apiary are cheerful, and full of confidence for the future of the honey business. The 12 colonies in my little house-apiary had two dead swarms that were entirely out of stores. The colonies with enough honey wintered in this most trying of winters, in which they never flew from the hives for 4½ months, in a more perfect condition than colonies in the cellar. The hives, combs, and bees, were without dampness or mold, and some of the bottom-boards were entirely free from dead bees. I can say, I believe truly that I lost 19 colonies this winter in further testing sealed covers. I first thought that they had starved; but we have just finished cleaning up the hives and combs, and found every hive with an abundance of sealed stores. I have long believed that the proper preparation of the hives for winter is the key to safe wintering in a good cellar; and I am thoroughly convinced that, except to keep out mice and other intruders, hives with the covers entirely removed, or with a single thickness of burlap or cotton sheeting spread over the hives, is better than any cushion or cover of any kind. My next choice is building-paper. With this I have not a single fault to find, after years of use, except the trouble of putting it on; and if I were going to use light covers I should prefer it to the best absorbent cushion you could make with any material I am acquainted with.

I visited a bee-keeper at Dover, Minn., last March, who has been very successful in wintering. He leaves his hives entirely without covers. For full particulars of this visit, see the *Bee-keepers' Review* for May, page 129.

I see in a late issue of GLEANINGS that Mr. Foster, of Mt. Vernon, Iowa, has been visiting an Iowa bee-keeper who has been very successful in wintering with a single thickness of cotton sheeting spread over the hives; and those who have read the early writings of M. Quinby will remember that, before he adopted the movable frame, he wintered his box hives in a dark room, turned upside down, and left entirely uncovered; and I do not believe that there is a better way to-day.

This may seem to be a long report to make on wintering at this time of year; but I have just received a letter from a Minnesota bee-keeper who has lost all his bees, 253 colonies, this winter, and I am convinced that 75 per cent of all the bees in this section are dead to-day. So you see wintering is a vital question; and there is no better time to impress people with it than when they are just feeling their heavy losses.

Forestville, Minn., May 13. B. TAYLOR.

[We have read over your article with more than ordinary interest, and we are inclined to believe you are right, in the main; and yet there is H. R. Boardman, who invariably uses *sealed* board covers, and who has uniformly good success in cellar wintering. But he leaves the bottoms of the hives off entirely. It is very possible that a large amount of bottom ventilation secures very nearly the same results as top ventilation with bottom-board on the hive as in summer. We should be pleased to have Mr. Boardman review this whole matter, for we believe no one is more competent to speak on this question than he, unless it is our energetic friend B. Taylor. Dr. A. B. Mason has wintered successfully in his cellar for years, with ordinary tight bottom-boards, with the usual entrance, the top of the hives being covered loosely with an ordinary sheet of duck. You may remember that, three or four years ago, he reported some quite phenomenal results in wintering on this plan. Perhaps Dr. Mason can give us some suggestions also.]

FRUIT-BLOOM FERTILIZATION.

THE INDISPENSABLE PART THAT BEES PLAY IN THE MATTER.

This question has been sent in for me to answer: "Do you think apple and pear trees would yield more fruit if bees were kept on the same farm? I have two orchards, with no bees kept within three miles of them, although I keep a few bees where I live. Every condition that I can think of seems to be favorable surrounding these orchards, unless it is that no bees are near, yet the trees do not yield well, and I thought that it might be on account of scarcity of bees during the blossoming period."

As this is a question of importance to nearly every reader of GLEANINGS, I will answer it through your columns, Mr. Editor, if you will permit me to do so. By way of replying to the above, I wish to say first, that there is no doubt that the *great* and *first* purpose for which bees were created was for aiding in the fertilization of flowers of different kinds; the honey part as a food, and as a delicacy for man, comes in as secondary, although but very few think of the matter in this way. A few years ago, while riding on a crowded stage some distance from home, one of the passengers began a tirade against the bees of a certain bee-keeper who lived in his vicinity, telling how they were injuring the fruit in his section, and how the farmers about him could not secure a large yield of buckwheat very often, on account of the bees kept by this man sucking all of the honey nature provided for the maturing of this grain out of it while the berry was in the embryo form in the blossom. When he had finished speaking, he showed by his countenance that he thought his wisdom along these lines much superior to that of any of the other passengers; and from different remarks it appeared that the most of those about him indorsed what he said. There was no one in the stage whom I knew or who knew me, so I saw that I had a chance to correct a wrong impression without being accused of selfishness on my part; consequently, in substance, I said that I did not consider the ideas advanced by my friend as sound; that I believed the honey was placed in plants for the express purpose of enticing the bees to plants and flowers which needed the bees for fertilization purposes. To this end, I continued, we find honey (or nectar) secreted only in such flowers as are incapable of self-fertilization; while those being capable of being fertilized through the agency of the wind, etc., secrete no nectar to entice the bees. As an example, we see wheat, oats, barley, corn, and herd's-grass, all capable of being fertilized by the rustling of their stalks by the gentle breeze, and none of

these secrete honey, as all of you know, although there are a few who claim that bees secure honey from corn. Then there are all the clovers, all of the squash and other vine family, and buckwheat, none of which are capable of being fertilized through the process applicable to the first. All these last named, secrete honey for the sole purpose of enticing bees, flies, etc., for fertilization, so that they may mature seed that the species may be perpetuated. The same thing holds good with trees of all kinds; hence the claim put forth by some, that the bees injure fruit by taking the nectar out of the blossoms, is a false one. I then told them of the law a few jealous persons succeeded in passing in a certain township in Massachusetts, banishing bees from that town; how the result was, that little or no fruit developed in the interior of that township, while all along the boundary, fruit was as plentiful as ever; and that, after this experience regarding their folly, they were glad to welcome the bees back again, when they again had fruit as formerly. I also told them of the importation of bumble-bees into Australia to fertilize the red clover; of Gregory's experiments with squashes by tying netting over the blossoms, etc.; then I had the whole number converted to my side of the question, unless it was the man who had denounced the bees. Whether he was converted or not, I do not know; but I do know that he made no reply to what I said. When men plead that bees injure fruit by taking away the saccharine matter secreted for and needed by the fruit in its development, they show their ignorance; and it is the duty as well as privilege of every beekeeper to dispel this mist of ignorance which is abroad in the land.

Now to our correspondent's question. He asks if more fruit would be obtained if bees were kept on the same farm. Logically speaking, the more bees kept, the more fruit; but, practically, 100 colonies of bees, from one to one and one-half miles would be amply sufficient for the needs of all flowers a mile and a half from that apiary; that is, fruit would set to perfection for a distance of one and a half miles in all directions around that apiary. Three miles from this should be another such apiary, and so on. But such system as this is not often found; but hives by twos, fives, tens, fifties, etc., are scattered all over the country, and in this way nearly all fruit-growing districts are supplied with all the needed agents of fertilization which the fruit-grower needs. If, as our correspondent states, no bees are kept nearer than three miles, and there are none in the woods near his orchards, I would procure some by all means. If the location is otherwise good for bees, it would pay to do so for the honey they would give as surplus, as well as the fertilization of the fruit.

Borodino, N. Y. G. M. Doolittle.

WORLD'S FAIR.

DR. MILLER'S IMPRESSION OF IT; EXORBITANT CHARGES, ETC.

So many contradictory reports have been published concerning the World's Fair, I think the readers of Gleanings may be interested in having some little account from one of their own number who has been on the grounds. You see, I live a good deal nearer Chicago than friend Root does; so, instead of sending some one from Medina he got me to go in and set up his exhibit. While I have not had the opportunity for sight-seeing that one would have who could devote his whole time to that purpose, yet during a stay of several days I could not help finding out pretty well how things were going.

I'm not going to try to tell you what is to be seen, but leave that for friend Root after he goes there. He will tell it in a more interesting way than I can, only he will be a little at a loss whether to decide that there is so much to say that it isn't worth while to try it at all, or to take up a whole number of Gleanings with it. I think, however, he will compromise by giving quite a story in several numbers, and you may be sure it will be good reading.

I was somewhat posted beforehand, for I take daily the Chicago *Record*, and for months there has been never less than two columns about the World's Fair, and from that to two pages. By the way, I want to advertise that paper a little right here. It's a marvel of Chicago enterprise. Think of getting daily a newspaper having 8 pages, and sometimes 10 or 12, for less than a cent a day! It stands up sturdily for Sunday observance—the proprietor, Victor F. Lawson, one of the World's Fair directors, giving his vote always on that side. It has no Sunday edition.

Let me tell you that the Fair is not half finished, no matter what the papers say. It does not seem possible that the exhibits can all be in shape before the middle of June. And yet there is more than you can see in a good many days now. If it never was any more than it is now, it would be a big thing. The very immensity of nearly every thing connected with it seems to have the effect of belittling to some extent. For instance, there is one building that at a distance looks like a low shed-like affair, and yet it is the largest building ever erected on the face of the earth, covering 30 acres of ground, with 14 acres more of floor room in the gallery. There are 11 acres of skylights and 40 carloads of glass in the roof. I haven't been in it, but I've seen it at a little distance every day; and do you know I can't get that building to look any bigger than one a five-acre lot would hold out in the country? On the Agricultural Building are figures of men and animals that looked but little larger than natural, till one day I saw a workman standing by the figure of a man, and the knee of the figure came just to the armpits of the workman. In the same building is a cheese from Cadada, weighing 22,000 lbs., but it hardly looks it. So the first feeling, on looking at some of the immense affairs you have read about, is one of disappointment that they look no larger; but every day you see them they seem to grow in size.

One of the things that I was interested to know was, whether the stories told of the extortion and great cost of every thing were true. Well, it's a good deal as you choose to look at it. I could fill pages telling you about the many great and beautiful things you can see for the small sum of fifty cents, and how every thing is specially arranged for your comfort; and I could take a blue view of affairs, and fill as many more pages telling how some one is ready to fleece you at every step, and that discomforts are on every hand. I was amused at a couple with a young daughter beside whom I walked for some distance. They were railing at the way things were done, and the difficulty of finding any thing. The old lady was saying, "I'm getting to know what *I* think of the people of Chicago." And then she looked sidewise, partly addressing me as she said, "Why, if the people of Chicago who have lived here all their lives can't direct you where to find any thing, what is to be expected of strangers?" She seemed to take it in high dudgeon that every one in Chicago was not ready to tell her every thing she asked, just as

if it was the business of every Chicago citizen to know all about the Fair, and take special pains to instruct her! I suggested that some of the people of Chicago lived ten or fifteen miles away from the Fair, and it was not solely a Chicago enterprise, and that they could find out some things by asking the Columbian Guards. "The guards!" sniffed the old gentleman; and then he used a word that wouldn't look pretty in print as he said, "The guards don't know as much as we do."

Now, the fact is that the guards are well posted, considering the amount there is to learn about in 640 acres, and they are always accommodating and pleasant, ready to answer all the questions asked, in a way that makes you feel in a little while that every guard you meet is one of your friends.

On a wet day you will find it disagreeable getting around, as the mud, although not deep, covers nearly all the pavements. But that's getting better all the time. Likely enough, before you enter, a fakir in the guise of a good Samaritan will tell you that you will become very tired, and will want to sit down, and that you can't get a seat for less than ten cents, and he'll sell you a nice stool for a dollar. When you get to the gate you will not be allowed to take in the stool, and you'll not know which to curse most—the fakir or the exposition company. For a stipulation, the authorities have granted to one company a monopoly of the stool business; and if you carry a stool around with you, you must pay ten cents a day for it. If you want to hire the use of a rolling-chair in which to push around your wife or mother, you will have to pay 40 cents an hour for the use of it. It will cost you 75 cents an hour for one of these chairs, with a guide to push it around. Your indignation at paying so much will be somewhat softened to think that, by so doing, you are helping some poor fellow to work his way through college; for these guides are made up mainly of students from the different colleges.

I have seen estimates as to how much it will cost you to see all the Fair, amounting to a number of dollars. The plain truth is, you see the Fair for just fifty cents a day. Along Midway Plaisance are foreign villages, theaters, etc., that you can see for nothing from the outside; and I am told that the outside view is something worth while; but you can not enter these places without paying admission, just as you pay admission to the side-shows at county fairs to see the double-headed baby, the learned pig, etc. But you can continue sight-seeing for many a day, at only 50 cents per day. You'll do well to train your legs for walking, some days in advance; for if the phrase "magnificent distances" applies anywhere it is at the World's Fair.

With regard to water, the papers have said you couldn't get a drink without paying for it. In no part of Chicago, at no county fair I have ever seen, is water so easily had as at the World's Fair. It is in square boxes, like dry-goods boxes, scattered over the grounds everywhere, free, cold, and good; and I haven't seen a chance to get any kind of drink by paying for it, but there undoubtedly will be, perhaps are now, places for selling lemonade, etc. Hygeia water, piped from Waukesha, will be for sale at a cent a glass, but it isn't to be had yet.

Except in the State buildings, seats are scarce; but I am told there are to be seats scattered over the grounds. Extortion is practiced in cases where you get in a tight place to get something in the line of work done. In some cases it seems a matter of necessity that delays make it very expensive for exhibitors to get any thing done. It depends a little on the way you look at things whether you call it vexatious and expensive delay or extortion. Perhaps you may submit to the delay and extortion, perhaps you may wiggle out of it. I'll give you an example of both extortion and delay: I needed 212 feet of boards, to be built on to one side of the case for friend Root's exhibit, and the carpenter work for it. I found a boss carpenter who agreed to let me have two hands to work any minute I was ready for them, charging fifty cents an hour for each of them (50 to 60 cents per hour is the usual price for eight hours' work, and 50 per cent is added for any thing over that time). But the carpenter told me that I would have trouble in getting the lumber, as the lumbermen were two days behind orders, and some of his jobs were now waiting on that account. The prospect of two days' delay was not pleasant. Acting on the advice of my son Charlie, who is one of the Columbian Guards, and whose advice has served me well on more than one occasion, I concluded to try to shorten the delay; so I took my stand (or, rather, Charlie did) at a spot where teams were going back and forth, and in perhaps half an hour I caught a Dane with an express wagon. I got on the wagon with him, went to the nearest lumber-yard, got the lumber, and came back quite elated. But when I got to the Agricultural Building I found a long line of wagons standing waiting their turn. It would be several hours before I could get in. I wasn't so much elated. I went in to the man who has such things in charge, told him my fix, and asked him if he couldn't have the boards trucked in for me. Oh, yes! he would have them trucked right in, and it would cost me only $2.00. I demurred, and he very coolly told me to find some one else. It was a case of extortion, pure and simple; and the question was, which was cheaper—to submit to the extortion or delay. If I submitted to the delay, of course the expressman must be paid for his time. I thought I would try not to submit to either. I went into the building, put on my best-natured smile, and told my carpenters I was ready for them to go to work. I thought the chances more than even that they would tell me they were carpenters, not porters, when I told them the first thing was to take the boards on their shoulders and carry them in. But they were good-natured about it, and went right to work. The expressman helped, and then frightened me by charging only 60 cents for bringing the stuff.

But in other cases the way out is not always so easy. In one case after waiting half a day a man paid $3.00 for half an hour's hauling.

Prices for food on the grounds are, to a large extent, extortionate. Don't submit to it. Bring a lunch on the ground with you. If you don't want to lug your lunch around with you, have it checked for you at the Illinois Central R. R. building (there may be other places), at a cost of ten cents.

As to the cost of supper, lodging, and breakfast, you can make it about what you please. You can get good board at hotels, close by the grounds, for $25 a week; and if that isn't high enough, you can have better rooms and make it higher. I'll tell you how I did. Charlie told me of a very nice restaurant, right close by the grounds, corner of 63d St. and Hope Ave. Every thing is nice, clean, and good, with prices just the same as they have always been at such restaurants in the city. I went into a hotel and asked what I could have a bed for. Two dollars and a half. As I didn't promptly say I wanted it, the clerk said he could give me another one for two dollars; but I left. Then Charlie skirmished around and found a place for me. I got a nice clean comfortable room

and bed for $1.00 a night; and if I wanted it by the week I could have it for $4.50. The place is Hotel Linwood. All the new hotels seem to have that fool way of having the names wrong end foremost. It is on the south side of 63d St., just a little west of the restaurant, and I think it is No. 336.

I give you particularly these places, that you may have some place you know about. Possibly you may do better. If you wish, you can, for five or ten cents, get to any of the Chicago hotels. Bee-keepers will remember the Commercial, corner of Lake and Dearborn Sts., where bee-conventions were held. Their prices are unchanged, and you can have supper, lodging, and breakfast for $1.50.

So you see you can get along very nicely for $2.50 a day, admission fee and all. If you want to be very economical you can take off a dollar from that, for beds are to be had for 50 cents or less, and you can get cheap lunches and stuff at bakeries. But I don't know the ropes well enough to know where you can get *good* beds at low rates.

If you can make only one visit to the Fair, by all means wait till the show is more nearly completed. A. I. Root ought to come right away. After staying a little while he would find there is a bigger thing here than he ever dreamed of. Then he would go home and make arrangements to come a little later, get a cottage for his family, and spend the summer. It would be as good as a summer in Europe, and at much less expense. C. C. Miller.

Marengo, Ill., May 18.

We have just received the following circular from The Young Women's Christian Association of Chicago, which will explain itself. It will be of great benefit to those of our lady bee-keepers who intend to visit the World's Fair.

OFFICE OF
THE YOUNG WOMEN'S CHRISTIAN ASSOCIATION,
ROOM 61, 243 WABASH AVENUE,
KIMBALL HALL.

CHICAGO, May 1. 1893.

The Young Women's Christian Association of Chicago, now sixteen years old, has always been an aggressive body in aiding young girls depending upon their own resources for support. It has continuously, since 1876, kept a home for young girls, strangers in the city, opening from time to time new ones. Now it has four homes located at the following numbers: No. 288 Michigan Avenue; 5830 Rosalie Court, near Jackson Park; 367 Jackson Boulevard (West Side); and 3258 Wentworth Avenue. These homes are given as landmarks of safety to young, respectable girls who need protection or information in coming alone to Chicago. These homes, with their limited capacity, if full, *can direct* to suitable lodging-houses The great feature of the work of The Young Women's Christian Association is the Travelers' Aid Department, about four years old. Paid agents, wearing a blue badge marked "Young Women's Christian Association," meet the trains, to aid women traveling alone in making changes, or direct them as to the cheapest and safest way they may reach their destination. No charge is made for this service, as the agents are paid by the Association. Girls are warned not to speak to strangers, but go to the waiting-room, and remain until the badge is seen. The agents may be delayed a trifle, but will gratuitously direct as well as aid in finding the friends or shelter sought by women or girls traveling alone. Young girls proposing to visit Chicago should, three days prior to leaving home, address the head agent, Miss Anson, 5830 Rosalie Court, Jackson Park. State the exact date and time of starting as well as the railroad they will come over.

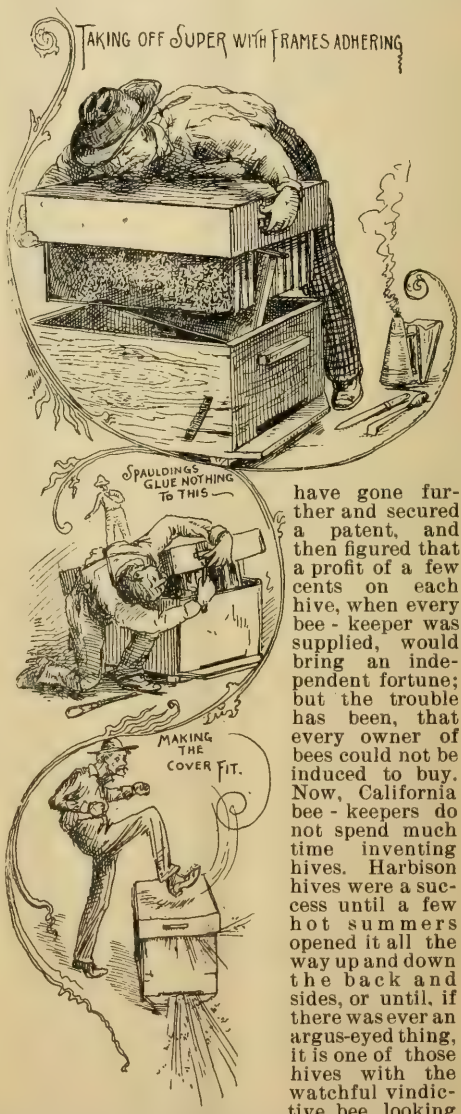
The sole desire of The Young Women's Christian Association of Chicago is to aid young self-supporting girls and women, and to protect them from imposition. Respectfully,

Mrs. Leander Stone, President.
Mrs. A. S. Chamberlin, Secretary.

RAMBLE NO. 85.

NOTES FROM THE APIARY.

The subject of bee-hives does not agitate the minds of California bee-keepers as much as it does those of our Eastern friends. In the East, nearly every bee-keeper has, sooner or later, invented a new hive or a moth-trap, and many



have gone further and secured a patent, and then figured that a profit of a few cents on each hive, when every bee-keeper was supplied, would bring an independent fortune; but the trouble has been, that every owner of bees could not be induced to buy. Now, California bee-keepers do not spend much time inventing hives. Harbison hives were a success until a few hot summers opened it all the way up and down the back and sides, or until, if there was ever an argus-eyed thing, it is one of those hives with the watchful vindictive bee looking out on every side of it. California bee-keepers, as a rule, don't care much about what the hive is if it will only hold together. We find some hives so flexible that, when the frames are removed, the body of the hive can be collapsed. Such a hive, if it could be re-formed again without considerable carpenter work, would just suit our California bee-keeper. The first question usually asked by the buyer of an apiary is, "Will the hives hold together?" Redwood is used to a considerable extent for hives and covers, and it is noted for its straight grain and its beautiful splitting qualities, on a hot day in

June when the mercury is indulging in its climbing propensities, and gets up to 110 in the shade, and somewhat higher in the sun. At such times I have thought that some of my hives cracked just from pointing my fingers at them. I might have been mistaken, however. Hives are sent here largely from the East, and they also may be classed as good and bad, and some are like a species of ham sent here in cans, I believe it is called "deviled" ham. You can infer what kind of a hive that would be; then put into it a colony of Cyprian bees, and an attempt to class it utterly fails.

The Rambler is controlling two apiaries this season, and one of them contains in part a hive of the above description. When I had to give my whole attention to one apiary I hired a very patient-appearing man hailing from Tennessee, to take charge of said hives. The style of hive I refer to is manufactured in Wisconsin. It is of the L. pattern, and I believe it is called the Wisconsin hive. There are no rabbets for the frames, and they all rest on the top of the hive, and the supers "sort o'" telescope over them. After the super has been on a few days, and a fine lot of brace-combs put in by the bees, you can loosen the super from the body of the hive; and, in raising it, lift out every brood-frame with it. If you wish to release the frames from the super before taking it off, you have to stand almost on your head and look up under that telescopic joint and start each frame off with a strong sharp-pointed lever. While thus bent over, with the pants drawn tight over the—the knees, the Cyprians get in some fine work. The manufacturers of this hive had the misfortune to have their factory burned a few years ago; and, soon after, Mr. Hunt and one of his helpers were at work over these hives, when the helper shouted, in a frenzied tone, "Mr. Hunt, do you know why that Wisconsin bee-hive factory happened to burn?"

"Why, no; I don't know that I do."

"Well, somebody bought a quantity of these hives, and became so mad when working with them that he sought a sweet revenge by burning the factory."

In many cases, in order to return the telescopic super or cover, owing to climatic changes and propolis the super becomes a tight fit; and to get it down to where it belongs it has to be stamped down with the foot. Take it all in all, the hive is the most provoking thing to handle that I ever saw, and I am utterly opposed to telescopic joints of any kind in a bee-hive.

Another Eastern hive put in its appearance during the past winter. The inventor and manufacturer came to California for the benefit of his wife's health. The gentleman's name is Mr. G. K. Hubbard, whose advertisement has been seen so much in GLEANINGS. Your readers have all no doubt heard of that good old dame Mother Hubbard, who went to her cupboard, and how kind she was to her poor dog. Well, judging from the kindly ways of Mr. and Mrs. Hubbard when here, I should judge they were lineal descendants of that fine old dame. Mr. H. introduced a few of his hives; but I fear it will hardly suit the general run of California bee-keepers, for I understand it to be an exclusively comb-honey hive; and while I should like to see Mr. H. sell a large number of hives, I dislike to see another style of hive added to the number we already have in this State. The greater variety, the further we get from a uniform hive.

At the present writing, April 29, the season is opening up in fine style in this locality, and I have been converted to the belief that bees will profitably fly five miles and further for honey. While keeping bees in the East, I was taught and believed, after much experience, that bees would profitably fly only about three miles. But here for the past ten days the bees in this apiary are all working toward the Riverside orange-groves, which commence at four, and are abundant at five and six miles and over; still, the honey with a distinctive orange flavor is being stored so rapidly as to restrict the queen's field of operations. Balled sage is in bloom all around the apiary, and an examination of the flower-tubes reveals the minute drop of honey, but still the great mass of bees leave it for the more abundant secretion in the orange-flower, and in quality it is equaled by none. It seems to be about this way with the bees: If honey is abundant five miles away, and a load of nectar can be obtained by visiting a few flowers, it is better to fly five miles than to worry around a nearer field and visit a great many flowers spending much time to get a load. As the bees have nearly a straight course across the valley, with nothing to impede them, their flight is very rapid. It is also evident that bees will fly further for nectar upon a level plain than they will where hills intervene. Our friend Wilder's apiary is about seven miles from the same orange-groves; but hills intervene, and his bees get but little if any of this orange honey.

Perhaps I may be allowed a word with some of my good friends who have held me up in words jocund and otherwise. I would say, by way of explanation to Mrs. McIntyre, in answer to her correction on page 267, that she should never judge from outward appearances. A man in my native town would always smile when he was mad, and really laugh aloud when he was ready to knock a man down. That man was a relative of mine, and I am like him in that respect. That smile at the convention was no indication of pleasure. It covered a great amount of gall and bitterness and silent kicking; my report was correct, and I hereby recorrect Mrs. M.

Mr. Pryal also fell into a grave error on page 303, and, I must say, drew largely upon his vivid imagination, judging from the noise Mr. Mendleson and I heard in their room the night previous. They were practicing for some kind of a blow, and both seemed to have lungs abnormally developed, or what physicians call snore lungs; and while Bliss tried to imitate a thrashing-machine, Pryal tried to outdo the famous Golden Gate fog-horn. Oh, no! the Rambler was not sad over being outdone on the lung-tester; it was owing to being kept awake all of the previous night by these snoriferous friends. Mr. Pryal is now at the World's Fair, and his report will deal largely with lung-testers.

RAMBLER.

CHIPS FROM DIFFERENT BLOCKS.

WOODCHOPPER SCORES ALL AROUND THE LOG.

The Straw man says, March 15th, that more deaths occur now in a day than in a week at the beginning of winter. The births are more now in a day than in a week then, so it's all right, is it not, doctor? But may be your bees are not hatching in the cellar; but those in chaff hives outdoors are.

Pulled queens, to get rid of laying workers, sometimes works, and then, again, it doesn't. Sometimes they will keep the pulled queen and the laying worker both until the queen is mated. I suppose they are waiting to see whether she is a good one, so that, if not, they can fall back on the worker again, and sometimes they kill them at once.

SEALED COVERS NO GOOD.

The Straw man wants to know whether there

shouldn't be a chaff cushion over the cover. Now, doctor, I don't believe in sealed covers at all; but just to be in fashion I fixed up one and put it on the hive in August so as to be sure it would be sealed, and it was as tight as bee-glue could make it; and then when cold weather approached I put one of the same cushions I use on all my hives right over it, one thickness of cotton cloth and six inches of chaff. Now, may be you would like to know how it worked. The cover was partly glassed, so that I could see the bees at any time by raising the chaff-box without disturbing the sealing or the bees either. The first month, all was well; then it began to get damp around the sides of the hive, and soon the bees began to look fat. At the end of another week it was wet. Drops of water were on the glass; bees were getting fatter every week, and soon they began to die; and the drops of water got to be so large that they couldn't hang any longer, and dropped down, forming puddles on top of the frames, and the bees died faster, and the whole colony came up on top of the frames, and were the most miserable-looking set imaginable, while the bees in the hives without sealed covers were dry and comfortable. I saw that they were all going to die right away if they did not get a change, so I pulled off the sealed cover and put on the chaff-box, and in a week the water had gone out of the hive; the bees stopped dying and began to grow smaller, and in two weeks they were all right, and are breeding up again; and although it may be only one straw to show which way the wind blows, it is all I want to do with it until I wish to get out of bee-keeping.

ICE CLOGGING THE ENTRANCE IN WINTER.

As Mrs. Axtell and some others seem to fear there may be danger from ice in winter, I will tell them how my bees were wintered in ice the past winter. To start with, on the 17th of November, without any warning, it began to snow from the northeast, and snowed six inches of the wettest snow I ever saw, with one exception, and it stuck all over every thing it touched, so that the hives were completely covered with wet packed snow; then it turned cold, and froze on, so that it could not be gotten off; then in about a week it rained, and froze as it fell, until there was an inch of good clear hard ice all over the snow, which was frozen to every thing, and the hive resembled a snow mound coated with ice; then it snowed again at different times until the snow was higher than the hives, and, in part of the yard, twice as high, and packed so hard that I could walk right over the hives and not show a track. Now, I thought, is the time for bees to smother if they are ever going to, as they were completely cased in ice, and all that snow on top; but I let them alone until they had been there about six weeks, then I went and dug out a few hives. I found the bees dry and all right. I let them alone another month, then dug out some more, finding this time that they had melted away the ice and snow all around the hive, and were standing each in a little room roofed over with ice and covered with snow; and they stayed so until March came with sunshine enough to melt off the crust and slowly settle down the deep snow; but the bees did not get out more than a few at a time until Mar. 28, having been without a flight since some time in October—I have forgotten just when, but near the close of the month. Upon counting up I found three had starved; one had died of what I call cold-weather dysentery; three of genuine dysentery, and four more were in bad order because they were not in good condition to start with, and had got worse instead of better. They have since died, except one, which still shows a couple of spaces occupied for three or four inches around, with a little brood hatching. I don't believe that bees often smother with ice or snow in the entrance or anywhere else around the hive; and, also, whenever it is warm enough for them to fly, the snow will pack enough on top to hold a bee so that they will fly up again if they get down.

THE WHISKY BUSINESS.

If lots more of us would join you in your protest against having any money we pay for taxes going to build distilleries, and should also go further and protest against helping to build jails and poorhouses, and pay the expenses of courts, and all the various expenses connected with the drink-evil, I think it would be a good thing; for it is an indisputable fact that the government is in partnership with the whisky-business, and objects to a third partner, too, as witness the continual hunt for what they call "moonshiners," or illicit distillers. Now, as this is a government of the people, it either follows that a majority of the people want it so, or are too careless to say what they do want, or it would be stopped; but the fact is, Satan wants the business carried on; and the miserable subterfuge of making a political issue of what is the greatest moral question of the world to-day is keeping the business alive; and we have the spectacle of two great parties, both afraid to do any thing to cripple or seriously interfere with the traffic which is causing more disease and death, and untold misery, than any other one thing on the face of the wide world to-day; and then if you add to it the vast pile of money required to pay the cost of the resulting crimes and poverty entailed, it seems as if no thoughtful person could keep still and let the thing go on; but there are still too many people in the world who think they are not their brother's keeper, and that if a man will drink himself to death it is none of their concern.

FRAMES A LITTLE SHORTER AT THE BOTTOM.

Dr. M., if you want to know just why it would not be a good plan, just go out to your shop and make a few some morning before breakfast, and see how you like them, and may be you can tell us then.

HONEY FROM CHESTNUT-TREES.

On page 254 Mr. Benton makes reference to honey from the above source. Now, I should like to know what kind of chestnut-tree besides the horse-chestnut ever yields any honey. I lived 31 years in a chestnut region, and have watched lots of bees working on the bloom, but I never saw them getting or even attempting to get any honey, but always scrambling about over the long bloom (or tails as the small boy calls them), and getting only a small pellet of white pollen, scantily furnished at that. A great many people claim that they get lots of honey when chestnut is in bloom, but it is always in a place where basswood and chestnut grow in the same part, and the honey comes from the basswood; and the chestnut, making the most showy appearance, gets the credit, both trees being in bloom at the same time. But I hardly take Mr. Benton to be the man to be so mistaken; so if he knows of some kind of chestnut that yields honey, let him tell us about it. Then, too, he says it is gathered before July, and our chestnut very rarely blooms before the 4th of July, and sometimes not till the middle—I mean in the Northern States. I do not know when it blooms in the South.

TWO QUEENS IN A HIVE.

A good many report two queens in a hive; but it is always one old and one young one; but that Strawy Miller keeps two in a hive, right

along (sisters, too), and not a word do we hear about any disagreement; and it seems he has them named, too, for he calls one Emma, and the other one's name I don't remember; and if some smart young rambler doesn't come around and transfer one of these queens to another hive, just to pay off the doctor for his licks at the baches, it will be queer, won't it?

Say, now, Dr. M., why don't you make W. F. C. tell why bees don't put a little of that formic acid in honey-dew? or are they limited in quantity, and daren't try it, even on a small scale?

Queenless bees, as a rule, stop work, doctor, as soon as the brood is all hatched out; and while it is hatching out they fill the combs full of pollen; and, if not supplied with a queen, it will remain, there being no brood to consume. Is that one of the things you "don't know" too? If it is, suppose you make a swarm hopelessly queenless next June, and let it alone as long as there are bees enough left to keep out robbers and all the "Millers" (except one), and then see how much will be left besides pollen.

CAN THE QUEEN LAY DRONE OR WORKER EGGS AT WILL?

I see Dr. Miller is visibly weakening on the compression theory, if he was ever very strong on it; but to help him along a little further, let him put a frame of drone comb in one side of the hive, clear in the back corner, as far as possible from the early brood-nest, then watch and see what the queen will do shortly after a good honey-flow begins; and when she skips two or three frames of worker comb, and goes over to that piece of drone comb, and fills it with eggs, and then goes back to the brood-nest again without laying any worker eggs near the drone eggs. Doesn't it look just as if she knew what she was doing? and then when the queen lays in cells only $\frac{3}{16}$ of an inch deep, where does the compression come in?

ABSORBING CUSHIONS.

On page 363 you say that absorbing cushions often become wet and soggy, and, if not dried out during winter, are worse than nothing; and you further say it is never the thing to do, to place a telescope cover (without ventilator) over the chaff cushions so tight that there is no escape for moisture; and you say such cushions become practically water-soaked. Now, if that is the case with you, it is not with me, for my chaff is always dry; and I never take off the cover during winter to dry the chaff; and my covers are all telescope, and without any ventilation, and those covers get very frosty in cold weather; but when the sun shines it melts and runs down, not among the bees, but outside of the hive, and the cover then dries by the heat of the sun on top; but the chaff never gets wet, except a little spot right over the cover, and that only on top, for it will be dry and warm, you will find, if you dig into it half an inch. And now I should like to know why you call the cushions "absorbing cushions," for it is not proper. They should, instead, be "escaping cushions," or something of that kind; for if they absorb and retain moisture they are not what they should be, for they should throw off this moisture and retain the heat; and to do this there must not be any ventilation above the cushion; for if there is, it will make a direct draft from the entrance, and will draw out the heat from the hive, and the bees will perish from cold, no matter how dry they are; at least, that is the way mine work. I have killed good strong swarms in just a week, in a chaff hive, with six inches of chaff on top, with an inch hole in each end of the cover, close up to the roof, and the summer entrance open full width. I have used chaff boxes more than ten years, without changing the chaff in all that time; and it was clean and bright at the end of the time, which it would not be if it absorbed and held the moisture. WOODCHOPPER.

[Yes, chaff cushions do in our locality become wet and soggy, if placed under telescope covers, without ventilators near the top at each end. This has happened to be the case so repeatedly with us that we almost regard it as an axiom, and we still think so for our locality. Our winters are quite apt to be open, rainy, or misty, a good part of the time; and we find that, where ventilators are used, our cushions keep much dryer. This is another case where practical experience seems to be directly at variance, and for the present we may have to account for the difference by locality. We shall, however, observe the matter more closely during coming winters, and especially note the difference, if any, during dry cold winters and those that are open and more or less moist.]

BEE JOURNALS AND THE SUPPLY BUSINESS.

ARE THEY A GOOD COMBINATION?

THE following is an extract from a well-written article on the subject, and appears in the last *Bee-keepers' Review*, p. 143. Coming as it does from Mr. Hutchinson, who has as little to do with the supply business as any of the publishers, it has great weight. We never read any thing on this subject that was more to the point than this. The position taken is a broad and liberal one, and exceedingly fair to rival publishers who are interested in supplies.

When the *Review* was first started, its editor was in the queen-trade, and he has not yet dropped it. When he gave up the production of honey as a business, he advertised the fixtures on hand. Several times it has become necessary to take goods in payment for advertising, and then it became equally necessary to advertise and sell them.

From actual experience I have learned that it is very difficult for the editor and proprietor of a bee-journal to never offer any thing for sale except his journal; and perhaps there is not so much praisworthp in keeping bee-journalism entirely free from trade as some of us have imagined. Yes, I know that most of us poor mortals are more or less given to bias and prejudice in favor of our own wares, and I would not for a moment ignore this point; but on the other hand, the dealer is more in touch with the consumer; he knows what practical men are buying and using, and this experience has its influence upon his journal. If he uses his journal, or, rather, *mis*uses it, to boom his goods at the expense of truth, or at the expense of space that ought to have been used in giving good valuable reading-matter, there will be a reflex action—it will become a boom*erang*.

Class journals are a little peculiar in this respect. The men who have had experience in some lines of business are the ones in position to make valuable journals pertaining to these kinds of business. A nurseryman can make an excellent horticultural journal; an advertising agent can get up the best journal devoted to advertising; yet he deals in advertising, while the other man sells fruit-trees.

Another point: In making a financial success of a journal, a dealer or manufacturer can sell his journal at a very low price because it advertises his own goods.

While I have no desire to engage in the supply business, preferring simply the *Review* and a small apiary, with peace, quietness, happiness, and contentment, in place of a large business with its hurly-burly, even if accompanied with greater financial success, yet I have had no quarrel, and shall have none, with the man who prefers the latter; as I fully believe that the brightest journal, the one filled with the freshest and most practical ideas, the one with a "touch of Nature" upon its pages, can be made amid the hum of bees and buzz-saws.

GETTING BEES TO EMPTY SECTIONS.

"Along about these days," as the almanacs used to say, the question will again come up as to the best way of feeding out unfinished sections. I doubt the wisdom of keeping over till spring any sections to be cleaned out merely for the sake of being cleaned out. That would better be done in the fall. That is, if a section has just a little honey in it, it is better to have that section left where the bees can rob it out, and in that way they'll make a thorough job of it; whereas, if left till spring it will be granulated and dried down, so that it may not be properly cleaned out when the bees are ready to store in it again.

I know that some believe that a section should never be used the second time; but I can hardly help the suspicion that such persons have been unfortunate enough to use a second time sections that have not been *thoroughly cleaned out*, and I don't know of any way that thorough cleaning can be done but *by the bees*. But if there is any one thing I feel sure of in bee-keeping, it is that a partly finished section, if nice and clean, inside and out, is a profitable thing to use.

If the wood is nice and clean, the comb generally is; but sometimes there will be discolorations, perhaps propolis at the edges or mouths of the cells. Breaking or cutting off may remedy this, but I should expect the invention of B. Taylor for this purpose to be a great improvement. I think, Mr. Editor, that you raised the question whether it would pay to take the time for this. Having never tried the plan, I can not say with certainty; but if used hot enough, it seems to me that both sides could be melted off in at least as little time as it would take to put together a new section and put foundation in it; and if just as clean as the new one, I would rather have the old one.

As I have already hinted, those sections that are kept over to be fed in the spring are those with a larger amount of honey in them, and they have been kept over because we want the bees to have the benefit of the feed. It would seem that there should be no great difficulty in getting bees to empty out sections in the spring; but in actual practice it has turned out in the experience of many a one to be quite difficult.

Probably the first thought with every one would be to put the sections over the hive. Bees often carry down honey out of the sections when we don't want them to, as at the stoppage of a honey-flow, and they carry down well out of a feeder, but they can't be relied on to empty out sections on top. If for any reason I were confined to that as the only way, I should break open all sealed cells and smear honey all over the comb to make it as dauby as possible, for you can count on their cleaning it up; and, once started, they are more likely to continue.

After no little study over the matter, two years ago I settled on a plan that as yet I have not given to the public, and perhaps I ought to apologize for not having done so. It is well known that bees are prompt to appropriate honey at some distance from their hives; and the problem was, to have the sections at such distance that the bees would not consider them under their care, and yet so situated that no other colony could get at them. I'll tell you how I planned it. Under the hive was a bottom-board 1½ inches deep, same as in winter, and right in front of this was a similar bottom-board, the two entrances together. On this second bottom-board I placed a super of partly filled sections. Then I covered over with little boards the passageway between the hive and the super, perhaps 6 or 8 inches, leaving it open at the regular entrance of the hive. Thus you will see that no outsider could enter at any other point than at the regular entrance to the hive, but that the bees of the colony had free passage, and at the same time the honey was so far away that it would seem much the same as standing out in the open air. When a super standing unprotected is found by a bee, it doesn't take long for a large number to find the same place.

Notwithstanding the completeness of the arrangement, the bees had so often disappointed my expectations that I could not feel entirely certain of the result till after I had had their verdict. Placing several supers in position, I think I left them over night before examination. The next morning none of the sections were entirely cleaned out. Indeed, it didn't seem that the bees had done much at them, but I might be mistaken in this. But after several days' waiting, there could be no possible doubt in the matter—the thing was a dead failure. Worse than that, in some of the supers I found dead bees by the hundred. Now, I'm not going to explain why it failed—I don't know. But it looks just a little as though the bees could not find their way back out of the super into the hive, and perished there.

Last year Emma, for some reason, fed sections to such colonies in the home apiary as seemed to need it, without my help. The sections not going under the bottom-bars easily, she deliberately broke the comb out of the section and thrust the comb under. As a security against starvation it was certainly a success. As a matter of economy it was not a success, for none of the combs were of any further value but to be melted up. I expressed my disapprobation of the plan, and together we went to the Hastings apiary to feed in a more sensible manner.

We took along perhaps forty supers, raised up the hive from its bottom-board, set the super on the bottom-board, then set the hive on the super. In some cases we put two supers under a hive. No bee could get in, only at the regular entrance, making it safe from robbers. I could feel sure there would be no starving. But the bees did not seem strongly impressed with the thought that they should hasten to empty every drop of honey out of the sections and carry it to their brood-nest. In short, so far as getting the sections cleaned out was concerned, the plan was an utter failure; for, instead of being cleaned, the longer the sections stayed there the dirtier they got. They were, some of them, not emptied when the honey harvest came, and so blackened and filled with dirt that they were fit only to melt up. Emma might have retaliated, but she didn't.

Some one will say, "What's the use of writing about such things, if you have only failures to report?" Well, it may save others from making the same mistakes, and it would have been worth a good deal to me if some one else had reported these mistakes before I made them.

Now I'll tell you the plan that so far has been fairly successful with me, although it is not warranted to succeed the next time. Take the hive off the bottom-board. Set your super of sections on the bottom-board, and on this place two empty supers, on which set the hive. Put a separator between the super and hive at the front, so that it shall form a sort of bottom-board under the hive, and prevent any bee from entering the super from the outside without going over the full width of the separator. I think in this case the honey is so far down that the bees do not consider it as under their care; and as bees naturally go up to get out of a place, they readily get back to the cluster. The failure last year was perhaps due to the fact that the honey was too close to the brood-nest.

C. C. Miller.

Marengo, Ill.

JAKE SMITH'S LETTERS.

TRUBBLE INTO THE MEETIN HOUSE.

MR *A. I. Gleenings—deer Sir:*—We've been hevvin trubble into our meetin-house. Missus Welder is 1 of our members, and she wears the best close of enny buddy into the meetin house. Her man is a member, too, and, bein the richest man in the congerrygashun, he pays a good eel. Well, the Welders took a notion that wede ougth to hev a noo preecher. I gess the oald one wuzzent spruce enuff for them. His name is Bond — Elnathan Bond. And he doan't preech very floury sermons. Leastways, not floury enuff for them. And he doant dress up slick enuff for them.

Welder sez he doant preech Bible sermons. He preeched a sermon about how men hed ot to vote for men which was uprite, and woodent make laws to sell whisky, and faver horse horse-racin and gamblin and sitch, and Welder sed it wuz bringin politicks into the pullpit, and that wuzzent Bible preechin. He made a good eel of tock about it.

Then Barker's fokes got huffy. Thair boy Jim is about the worst boy around, bein spoiled from a baby, and now he's 16. Evry Sunday he kep up a racket into meetin, back by the dore. Finelly it got so bad that the preecher stopt right into the middle of his preechin and ast him woodent he hev respeckt enuff for the Lord's house to let uthers enjoy the wurship in silents. Jim's muther got her back up about it. Sez she, "Our preecher's alltogether too irritubble. He hezzent tack to git along with yung fokes. He haint no influents over em."

Uther people coód see it different, but they diddent say nuthin. If they had, it mite a bin different, but they diddent say nuthin, for the Barkers wood a soon got over it. But the Welders and the Barkers got toogether and become verry thick. Missus Welder tride to cumfort Missus Barker about Jim bein spoke to rite out into meeting; and the more she cumforted her, the more uncomfortable she felt about it.

Then Missus Welder went to old Missus Bleeker, as good an oald sole as ever lived, but she izzent what you mite call the strongest carrickter in the world, and wants to keep onto the good side of whoever shes with. Missus Welder went to her, and, sez she, "Do you know," sez she, "that they is a awful state of discontentment into the church about our preecher?"

"Law sakes! no!" sez Missus Bleeker; "and him sitch a good preecher! Why, I heddent herd a word of it. And I doant see how weal ever find a man as good as him to take his place, one that evry buddy likes so well, and that has sitch a good influents with the yung fokes. Why, him and his wife has jist bin the makin of the yung fokes Endevver sasiety. It's jist too bad."

"Yes, it's too bad," sez Missus Welder, "but they is a larg- feeling of dissatisfaction, and, no matter how good a man Mr. Bond is, we must have harmunny and peas. The church is more consequents than enny preecher, and Ime always willin to sackerryfize my oan feelins for the good of the church."

"Why, yes," sez Missus Bleeker, "I spoze we must do evrything for the best good, but it's too bad, too bad."

Then Missus Welder started for Joe Parks. JAKE SMITH.

This izzent the end.

SOME VENERABLE BEE-BOOKS.

A BRIEF REVIEW OF SOME OF THE WORKS OF THE OLD ENGLISH WRITERS.

A large pile of old books attracted my attention the other day, just as I was going out to our noon service. Now, the sight of an old book has a great charm for me, and so I stooped down and glanced at one. After dinner I asked what the books were and where they came from. After stating their history in brief, Ernest asked me if I would write a description of them for GLEANINGS, as he had no time for such a task, and knowing that their perusal would at least please me, and perhaps be instructive as well. The books themselves seemed so quaint, and yet meritorious from a literary point of view, that it seemed to me a great pity to have them all standing idle in a book-case, like a lot of prisoners waiting for court to open; so I made up my mind to let the bee-folks of today know what those of old times have done; how they grappled with the winter question; how they tried to stop swarming, and how long it took the world to find out the true sexual nature of the queen and drone.

Nothing can better attest the wonderful anatomy of the bee than the vast amount of literature devoted to it, especially in England. In France and Italy, whose climatic conditions are so pleasant, this might have been expected; but to find so many bee-books from England, printed at so early a time, and from the pens of men standing in the highest walks of life, is highly gratifying to one using their language and belonging to their race.

If one be tempted to smile at some of the conclusions of our ancestors, he should remember that, before steam and electricity were harnessed up, communication was slow and expensive; and printing, too, in particular, was very costly when not over 240 impressions could be made in an hour on the old hand-presses universally in use before the year 1800. And then, again, how greatly we are indebted to the microscope in its present magnificent state! Let us rather admire the great results achieved by our forefathers. Who will be reading a copy of the A B C book 236 years hence? or Cook's Manual? and how will such books stand the test of criticism in the year of grace 2130? It seems probable, however, that future writers can only add to the general conclusions now held in regard to the bee, and not sweep them entirely to one side as mere rubbish, as we are compelled to do with the writings of those who lived 200 years ago. That the queen is the mother of the bees; that she is fertilized once for all by the drone, and that the workers are undeveloped females, will never be questioned. But that there is room for improvement in the management of bees is readily granted.

The only regret one can have in describing such books is, that the reader can not see them himself and thus render a description useless; but as that can not be done, the next best thing will be resorted to.

The first book I come to is entitled, "A Theatre of Politicall Flying-Insects. Wherein especially the nature, the worth, the work, the wonder, and the manner of right-ordering of the BEE is discovered. Together with discourses, historical, and observations physical concerning them. And in a second part are annexed meditations, and observatious theological and moral, in three centuries upon that subject. By Samuel Purchas. London: Three Crowns in Cheapside, 1657."

The book has 387 pages, 5 x 7; type four times the size of these letters. The work bestowed upon it may be imagined when we learn that the author compiled it largely from the works of about 400 writers, ancient and modern, whose names he gives. These names are printed also in the margin, opposite a passage quoted from their respective works. This is a very convenient arrangement. But what a wilderness of superstition the author makes his way through! Strange to say, these same false opinions are, in many cases, founded on a half-truth or imperfect reasoning from cause to effect. But it is refreshing to see how readily Mr. Purchas turns from some foolish beliefs that have survived so many centuries. For instance, in speaking of the theory of Virgil in regard to bees being produced by generation and putrefaction from the bodies of bulls, lions, calves, etc., the author says, "Whether there be any solidity in this particular, I am somewhat dubious, because it was never authentically proved." The idea probably originated by seeing bees hovering over a fly-blown carcass. He quotes the words of many ancient writers in reference to the generation of bees as well as of other animals; but his conclusions in regard to the queen, drone, and worker, are, so far as I can see, about as follows: The queen is simply a director of the bees. In all that Mr. Purchas says about her he seems not to have the least suspicion that she is the only female in the hive, and that she lays eggs. How that fact should so long escape the notice of men is the most astounding thing in the history of the bee. To prove that drones are male bees, and not a separate and distinct species, the author speaks of the bees "conceiving" one year and bringing forth the next; and that a colony well supplied with drones will be stronger on account of it! that is, each drone leads off a blushing worker for the next dance, while the queen gives orders. Probably the English of those days never dreamed that queenhood and utility ever exist in the same body, and hence a queen in the hive was supposed to be as useless as one on the throne; and so they interpreted the works of God by those of men.

Speaking of drones our author says, quoting verbatim: "The Drone, whatsoever some may say to the contrary, is the Male-Bee . . . . . by whose natural heat and masculine virtue the Honey-Bee, which breeds both Honey-bees and Drones, conceiveth." What a revelation to such a man would Cheshire's or Cowan's work be!

If those worthy old writers had spent less time in speculating about bees, and put a little more of it on hives, they would have learned more; for much of their error is directly traceable to the abominable skeps they used. In speaking of the proper size of a hive, our author says: "Hives are to be made of any size between a bushel and half a bushel;" but he considers half a bushel rather small. But between extremes he prefers a small hive—or, as we say, an eight-frame one rather than ten-frame.

Only four pages are devoted to hives, and even that little suffices only to show the dense ignorance of those times regarding hives. This was a hundred years before Huber was born. Concerning the material of hives the author says: . . . "some [are made] of square boards, three foot high, and a foot broad; so in scarcity of hives, I have known some use Butter-firkings; some of earth, which they daub with Cow-dung within and without, because the smoothness is offensive, and the heat and cold also otherwise would be too extream."

The other subjects treated of are swarming, enemies, diseases, etc. In spite of the many grotesque fancies in this old book, it is fascinating, no matter where it is opened. The author lived in a transition period, when men were beginning to break away from their faith in Aristotle, Ptolemy, Aristarchus, and others, and to think for themselves; still, they were ready to quote the ancients if it helped their argument. The book gives us a glance now and then of life in England when the government was as headless as the late king (Charles I.), and Cromwell was wielding the last of his brief authority. Nine years after the book was printed London was burned, and doubtless the printing-office with it where the type were set. Such books tell us how far we have progressed over the sea of human invention. W. P. R.

Medina, May 20.

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

MORE ABOUT CATFISH.

Mr. Root:—Please tell Mr. Levi A. Ressler, of Napanee, Ind., p. 353, that the best variety of catfish for fish-ponds is the blue (or channel) cat. He can obtain them of W. H. Dye, Philadelphia, Hancock Co., Ind.

Henry, Ill., May 9. Bernard Reisinger.

ANOTHER SUGGESTION FOR HOLDING OPEN THE MOUTH OF A SACK.

Take an ear of corn or a rolled-up price list in each hand, and roll them in the mouth of the sack from the outside, then you have a square-mouthed sack. One ear will do quite well for one alone. M. W. MURPHEY.
Cuba, Ill.

BAD FOR SEALED COVERS.

Sealed covers are a failure with me. I went into winter quarters with 108 colonies, part of them under sealed covers. Most of them under sealed covers died. The rest are in good shape. I winter on summer stands. We have had a long cold winter in Missouri. G. W. BABB.
Medicine, Mo., May 10.

SEALED COVERS A POSITIVE FAILURE IN WINTERING.

I want to say, in regard to sealed covers, that, during cold weather, they *sweat* so as to be very dangerous. I had two weak colonies that I did not get sealed. I put just one good gunny sack over the frames, and laid on the lid. They both wintered, and were in good shape all the time. I had them open several times in December, also in February and March, and found them booming. I bought eight stands in box hives during fall. I got them packed on top of the combs with a Hill device; and although they were not packed until on or about Jan. 1, they all came out strong. They had nothing over the bees to protect them until I packed them. The more exposed they seemed, the better they wintered.

I fear our shallow frames are bad for wintering. One neighbor had four Dovetailed hives. He left on the empty supers. They also wintered in excellent shape. Now, that is ventilation with a vengeance. I intend to have either double hives or 1½ stories full of bees, and feed hereafter, and I look for success. I don't want any sealed covers in my yard.
Newman, Ill., May 11. BYRON E. SMITH.

THE CRANE SMOKER JUST AS REPRESENTED; THE PORTER BEE-ESCAPE AND COWAN EXTRACTOR.

The new Crane smoker is at hand. In regard to this smoker it is, I believe, all that is claimed for it. That check-valve is perfect; the fire is easily kindled, and it does not have to be filled every time a hive is opened. It fact, it fills a long-felt want. In regard to the Porter bee-escape, I am afraid I was a little hasty. After a further trial, and having extracted nearly one ton of honey, I am very well satisfied with it, and would advise all producers of extracted honey to give it a trial. In regard to the Cowan honey-extractor, if I had another 150 or 200 hives I would increase its capacity by the purchase of another two-frame like the one I now have—that is, if it were necessary; but I believe a two-frame Cowan will extract all the honey that two or three men can bring in day after day. In regard to the solar wax-extractor, here in Louisiana it will extract wax from old black combs as well as any other process, besides doing it much cheaper, cleaner, and with less fussing. I am one of the A B C class; but I do not read the book now; for, as we used to say when we were boys, I know it by heart.
Musson, La., May 15. A. W. TUFTS.

FAX.

Most all the honey I have seen in the market the past season 'pears to be sugared.

Thay'll be lots o' honey-"due" here this year, but, will we git it? that's the pint.

Here's a fax that hain't a fax: *All* bee-keepers, when they sell honey, allus put the onriest-lookin' boxes next to the glass in the shippin'-crates.

I kin slide my hives peart nearly all over the razberry patch tryin' to git that "lateral" motion with the old-fashioned Hoffman frames, 'thout any tin rabbets.

My 'sperience with spindlin' bottom-bars is, that, after a season er two, the bees built down and partly round 'em, plump and square. Sumtimes I like to ketch a frame by the bottom-bar but dislike to dent the komb.

Advice to beginners in the old cattleogs had us Hoosiers down purty safe at $25 proceeds from a single colony; but the new ones, tellin' us not to git extravagant er crazy if we cleered $5 er $10 frum one hive in a single seesin, makes it a little risky. ELLERY KRUM.

B. N.—If the Italyuns was crossed until thair tongues is long nuff to work on red clover, what would become of the poor bumble-bee? I don't want the Italyuns deformed by havin thair bills as long as a Watterberry watch-spring, and the bumble-bees put on sich slim pickin'. I object, and suggest to them persons what aint satersfied with the honey-bee as she is, that it mite be a good plan, when they send 'em out on red clover, to supply each bee with a "Stray Straw" to suck the honey out with. E. K.
Alexandria, Ind.

THE MAPLE-SUGAR PRODUCT OF THE STATE OF OHIO; THE EXHIBIT AT THE WORLD'S FAIR.

From the Chicago *Dispatch* of May 13 we make the following extracts:

One million dollars' worth of maple products are produced annually in Ohio, mostly in the counties known as the Western Reserve. Geauga County leads, with $150,000 annually; Portage County follows, with $100,000, and Ashtabula, Medina, Trumbull, Cuyahoga, Mahoning, Summit, and Logan Counties all make large quantities.

Mr. Thrasher showed a letter from John D. Orr, deputy collector internal revenue, Youngstown, Ohio, which stated: "The average quality of maple sugar sent from Ohio to Washington, D. C., 'to be examined for the two-cent bounty,' tested higher than the average in any other State in the Union." The exhibit consists largely of samples sent in and donated by the farmers from all over the State, about 200 different makers having contributed, and is as good a test of the average production of the State as could well be collected. Logan County especially seemed to outdo herself in the quality of her exhibits. Mr. T. seemed surprised at this, as he said Logan County was considered rather too far south to be in the maple belt.

The east end drew the crowd, for, beside the bottle display above them, hangs from the cornice a large glass pendant filled with the maple syrup, and just below it on a shelf inside an alcove stood a beautiful glass pitcher 32 inches high, filled also with syrup. But this was not all; for down on the counter was arranged on the left an old-fashioned sugar-camp with the log shanty with the coon-skins on the side to dry; the old log fire over which boiled two iron kettles suspended upon crotched sticks. A man with a yoke on his back was gathering the sap from the rough troughs, while a boy was just bringing the oxen up with a load of poles on the long woodshod sled. Many an old man brushed a tear away as he looked at this, and called the attention of his grandchildren to the way he used to do down east when he was a boy.

Sugar in all styles, from the 15-pound cake to the penny cake, is shown; and the impression received by a visitor to the exhibit is that any lover of good, pure maple sugar or syrup would miss a pleasing and instructive sight if he failed to see the Ohio maple exhibit.

The above is certainly to the credit of our State, and we are very glad indeed that the great outside world has now an opportunity of knowing not only how much maple sugar Ohio can make, but how good it is.

A CORRECTION FROM W. W. BLISS; A HINT FOR THOSE INTENDING TO GO TO CALIFORNIA FOR HEALTH.

I have read W. A. Pryal's article, on page 304; and as he has things "sorter" mixed in regard to myself, I wish to correct them. He was here but two or three hours; and as most of that time was spent in driving through the orange-groves of this district, he must have got his "notes" mixed somehow. The land of which he speaks belongs to my brother, and part of it was bought of the party who owned the original Mexican grant, the rest of the tract from the S. P. R. R. Co. There are about 80 acres of the place cleared, some 40 acres of which are set to fruit-trees. Most of the trees are peaches; then come lemon, orange, prune, apricot, plum, pear, etc., in the order named. The future planting will be mostly lemons and peaches.

There are seasons when dark honey (that gathered from sumac, goldenrod, etc.) brings a good price; but I found it useless to attempt to keep bees in a location where the honey is usually dark, one year with another; and should I ever again be so situated that I could follow bee-keeping I should certainly go to some location where the most of the honey gathered is light-colored.

Bees in this locality have done but little so far this season. In one apiary, of some 125 stands, there have been but five swarms, and swarming is usually about over with by this date.

The first eighteen years of my life were filled with sickness. In the winter of 1874 I had congestion of the lungs, and hemorrhage, bleeding about two quarts. In October, 1876, my mother, brother, and myself started for California. Since that time my health has been very good. Let me say to those who have lung trouble, if you ever intend to come to California, come while there is yet hope; do not wait until one foot is in the grave and the bank caving under the other foot, and then expect our climate to give you a new pair of lungs. W. W. Bliss.

Duarte, Cal., May 8.

ANSWERS TO QUESTIONS

FROM BEGINNERS.

W. B. R., of Va., asks us how we prevent the wax from sticking to the Daisy foundation-roller. *Ans.*—See that the roller is clean in the first place. Dip it occasionally in water while in use, and you will have no trouble.

Mrs. S. J. G., of N. J., has 22 colonies of bees, all the increase from one colony that came to her; and she wants to know how she can manage them so as to secure most profit from them. *Ans.*—For our answer to this question we would refer you to the reply to R. F. W., on page 396 of our last issue.

J. W. M., of Mich., has a good many empty hives filled with honey from which bees have died during the past winter. He wants to know if he can hive new swarms on them again this summer. *Ans.*—Yes, sir. Those hives will be as good as any, and the new swarm will very soon sweeten things up if the hive has been befouled with dysentery. But J. W. M. should remember, in the mean time, to keep the entrances closed, otherwise he will have robbing.

W. R. W., of Del., says the bees in one of his hives are running in and out of the entrance, and that he is almost sure they have a queen, although he admits that a queen-cell hatched the other day. The fact of a cell having hatched would indicate that they probably had no queen, or, at least, one that was "playing out." The commotion at the entrance may have been induced by the young queen returning from her wedding-flight. Without seeing the colony itself, we could not give any more definite surmises.

Willie Atchley, a son of Mrs. Jennie Atchley, sends us a drone having a white head. *Ans.*—The drone is a regular "sport." Although the head is white it is of a rather greenish cast. In our A B C book we mention the fact, under the heading "Drones," that very often drones having variously colored heads may be found. These are simply a freak of nature, or, what may more properly be called "sports." This sporting, so far as the variously colored heads are concerned, seems to be confined entirely to drones.

J. W. S., of Ind., says his bees are spotting up the hives pretty badly; bees seem to be weak, and he is inclined to believe they are affected with what is called dysentery. He wants to know what to do. *Ans.*—No doubt the bees have the regular dysentery. The only thing you can do is to let them alone. If you unite a lot of these weak bees they will all die just the same. The only cure we know of is good warm weather. The entrances must be contracted pretty close to prevent robbers from utterly annihilating them.

H. N. J., of N. H., says he has 20 colonies of bees; but as his business calls him away through the swarming season, he wants to know how it would do to put Alley drone-traps on, and catch the would-be runaway swarms. *Ans.*—This can be and has been done, although an attendant, soon after the swarm returns and clusters about the trap, should remove the bees and hive them in a new hive. We should prefer, however, to use the Pratt automatic hiver, as illustrated and described on page 135 of Gleanings for Feb. 15.

D. W. B., of Ct., asks whether we know any thing about the "Controllable" hive. *Ans.*—Yes, sir. It is a hive that used to be sold by Mrs. Lizzie Cotton, of West Gorham, Me., at six or eight times the price of hives of the same capacity sold by other manufacturers. It is an improvement over the old box hive, and that is about all that can be said for it. As to its being "controllable," it is no more so—indeed, not as much so—as are hives of to-day sold by reliable dealers. We believe that, of late, Mrs. Cotton has not charged such an enormous price; but she has no success in selling hives among those who are informed in regard to the present developments in bee culture.

H. H. G., of Fla., says that, after the honey season, he has great strong colonies. Desiring to increase, he wants to know the best way to divide them, and how to supply the queenless half with queens the most economically. *Ans.*—After having prepared new hives on separate stands, divide one of the colonies by putting two-thirds of the bees and all the *sealed* brood, with the queen, on the new stand. This will leave the *unsealed* brood on the old stand with one-third of the bees. Most of the bees on the new stand will return, giving the old stand, perhaps, in the end, the larger share. But as the new hive has all the hatching brood, young bees, and the old queen, it will very soon be equal in strength to the old one. After the old queen is removed, the old colony may rear cells from the unsealed brood; but it will be better to give them cells from some choice queen previously made queenless for the purpose. These

cells should be eight or nine days old. If economy is not so much of an object, purchase some good untested queens of some reliable queen-breeder. In August they are as low as they will be—generally about 75 cts. each.

Corbett & Cooper, of N. C., inquire whether we would recommend putting supers on new swarms the first season; also, whether a starter should be put in the bottom of the section as well as at the top. Their bees are in old box hives, because they do not believe they are equal to the task of transferring. *Ans.*—If you are speaking of first swarms, or swarms that are strong, we would say, put the supers on, providing honey seems to be coming in. Starters—that is, narrow ones—may with advantage be fastened to the bottom of the sections as well as at the top. Dr. Miller uses a wide starter at the top, letting it hang down two-thirds of the way. He also fastens a narrow one at the bottom. In this way he finds that the bees, in drawing out the comb, leave a good attachment at both top and bottom—the upper starter, as it were, growing into and uniting with the lower one. As to the difficulty of transferring, that is a small matter providing you follow the Heddon short method as described in the A B C book (which you have), under the head of "Transferring." On page 390 of our last issue will be found another description of the same plan, perhaps better adapted to your situation.

J. R., of Ill., has a colony of bees in a tree in the dooryard. Not desiring to cut the tree, he would like to know how to get the bees out. *Ans.*—This is a rather difficult job. If there is any other hole to the cavity in the tree (in the absence of one, one can be made with an auger), a stream of smoke could be blown in, driving all the bees, including the queen, out at the entrance. Before they can return, plug both holes up, and then hive the bees in a hive near the tree—of course, keeping the old entrance in the tree plugged up for two or three weeks, or until the bees are entirely accustomed to their new location. If it is impracticable to use smoke, place a wire-cloth cone bee-escape over the hole in the tree. Not a bee, as it comes out of the tree, of course, can get back; and if the escape be attached on a warm day, when the bees are flying heavily, there will be quite a little swarm cluster on the outside. These may be hived as first directed; but as you will not be likely to secure the queen, it will be better to put them entirely in a new location a couple of miles away with another queen. Leave them there for two or three weeks, and then put them where you like. Of course, the brood and comb will have to remain.

I. W. C., of Oklahoma, wants to know how to prevent swarming. This is a knotty question, and ordinarily we would refer our questioner to the subject in the text-books; but for the present we might refer him to the Langdon non-swarming system, as described on page 406 of our last issue. This promises much; but possibly it may prove to be a failure when tried by others. One of the old methods, and a good one, has been to remove or cage all the queens, on the eve of the swarming season and during that time. Another method has been to cut out all cells every eight or nine days; but as some cells are liable to be missed, and as bees sometimes—yes, frequently—swarm anyhow, cells or no cells, this method is not reliable. Our plan has been to let the bees swarm, and catch them, either by the Pratt automatic hiver, or in the good old-fashioned way, i. e., putting them in a new hive, placing the same on top of the old one. After the swarming season, we unite the two colonies; but this resulted in not much more than keeping down increase. What we desire to accomplish is, to keep down increase and secure honey at the same time, and we look forward with hope to the Langdon method.

T. T. T., of Ohio, sends us a photograph of his honey-strainer. It is simply an empty extractor-can placed beneath the honey-gate of an ordinary extractor, the top of the can being covered with an ordinary cloth stretched over the rim, and dished a very little in the center. T. T. T. offers to make a contract with us so we can manufacture them under royalty. For the life of us, we do not know what there is to patent about it, although T. T. T. says he has applied for one. We have no doubt that it will answer the purpose for straining honey, but it is an altogether too expensive way of doing it. A far simpler way is, to make a cheese-cloth bag and tie the mouth of it around the honey-gate. Where one is doing considerable extracting there should be several such bags, and the same should be washed out occasionally. These will strain the honey as perfectly as T. T. T.'s elaborate honey-strainer on which he proposes to secure a patent. Such a strainer as T. T. T. proposes to patent has been in use, not only by bee-keepers, but by housewives on washing-days, when they have wanted to strain water by pouring it through cheese-cloth, stretched over the top of a tub. We can scarcely believe that our friend is really serious.

OURSELVES AND OUR NEIGHBORS.

Children, obey your parents in the Lord; for this is right. Honor thy father and mother, which is the first commandment with promise; that it may be well with thee, and thou mayest live long on the earth. And, ye fathers, provoke not your children to wrath, but bring them up in the nurture and admonition of the Lord.—EPH. 6:1—4.

Toward the close of the year 1875—just about eighteen years ago—I first started a department in our journal, headed "Our Homes." My conversion to Christianity took place some months before, and there had been for some time a feeling in my mind that prompted me to take up some line of Christian work, even though it appeared in a journal which at that time was supposed to be devoted to bees and honey. Some of our older readers will remember that the journal was at that time enlarged to make place for these Home Papers. I felt impressed that God was calling me in a certain direction; and although I did not then exactly understand what it was he would have me do, I felt sure he would guide me if I listened carefully and prayerfully to his guiding voice. Looking back through the years, I feel just now more than ever satisfied that it *was* God's call, and that I was right in taking up the subject which I then entitled "Our Homes," as my special field of work. Other things occasionally pressed themselves upon me; and as our intercourse with our fellow-men brings our homes so near the homes of our neighbors, very often these talks to you have been under the head of "Our Neighbors"—sometimes both.

Even now it impresses itself upon my mind that the welfare and perpetuity of our American institutions depend more on the homes and home influences of our land than upon any other one thing. In picking out my text I found nothing in the Bible that seemed to include just the thought that I had in mind so well as the verses given above. Paul first makes an exhortation to the children; and that the home may be secure and safe, he exhorts them to obey their parents. Again, "Honor thy father and

mother." This includes remembering parental ties, even though a new home be started under another roof. What is more beautiful than to see a young couple, just starting in life, honor the father and the mother—yes, the *two* fathers and the *two* mothers? Here comes one of the first tests of loyalty—the husband to the wife and the wife to the husband. As you value your peace of mind, and the peace of mind of your dear companion in life, let me entreat you, dear reader, to be very tender and kind to the father-in-law and to the mother-in-law. Then Paul addresses the fathers: "Provoke not your children to wrath; but bring them up in the nurture and admonition of the Lord." From this we gather that such earnest, faithful words were needed by the Ephesians, long ago, just as they are needed now. Perhaps I should say here, that this whole subject was brought vividly to my mind by a home sermon from our good pastor, Rev. J. R. Nichols, of this place; and I have his permission to use some of his ideas and illustrations in this talk to-day, before I close. First, however, I want to take up seriously and soberly the subject that was diverted into pleasantry a few months ago. Even though some of the friends were inclined to poke fun at me, I am sure that, in their inmost hearts, they said, "Yes, Mr. Root is right, and his exhortations are sound and true." There never *can* be too *many* homes in our land; and there will always be danger when any individual—man, woman, or child—has *no* home. If a child loses its parents, one or both, a home should be provided for it. It seems that, through God's wisdom, there are necessarily some homes where the parents have no children of their own. Let such look after the orphan children of their neighborhood. Every grown-up *man* and *woman* should have a home. A pleasant, attractive, comfortable home is the best safeguard the world has ever given or can give against vice. It is one of the best stepping-stones to a godly and Christian life. While I do not think it needful to advise that young people should be in haste to marry, say while in their teens, I do believe great good would come, and that much misery and perhaps crime might be prevented if marriage were to follow pretty soon after emerging from the teens. The laws of our land have placed the majority pretty near this point, as you may notice. The boy is supposed to be a man when he is 21, and a girl is a woman at 18. When there are good reasons for postponing the marriage for a little time—say for finishing an education, or something of that sort—it may be well to wait a little; but my opinion is, that dangers often come in, as a consequence of delay. God said, "It is not good that man should be alone," and I think we all suffer loss, more or less, when we neglect or forget this great truth which seems to be so much a part of our being. The first step toward establishing a home is in choosing a partner for life. Quite a few have asked me—some perhaps seriously, and some in pleasantry—whether my advice was to be taken by women as well as men. I have not space to go into this subject right here; but I can answer this much: I do think that many women remain single because they demand *too much*. I do not mean by this that a good woman should bind herself for life to a vicious or bad man. But I do think she would be far better off as the companion of some man, if he is *honest* and *true*, even if he has not the brilliancy and talents that some men have. Many of our *best* men never gave much indication of what they were going to be when they were 20 or 25 years old; and I think I may add that *thousands* upon *thousands* would *never* have proved themselves benefactors to the race as they have done had it not been for the help and encouragement of the wife of their youth. Look about you and see. Had they never been *married* they would never have been *great;* and I believe this is true of women also, to a certain extent. I am almost ready to say that a good man has no business being a single man after he is 25 or 30. It looks bad, and it *is* bad. It is one evidence that he is *not* as good a man as he *might* be. You may take exceptions to what I am saying now; but I feel sure that I am right. There can be no real home without a wife. Now, pardon me when I say, neither can there be any *perfect* home—such a one as God intended to be a reflection of *heaven* here upon *earth* — until the home is lightened and brightened by the prattle of children. Of course, as I have said, there are cases where it seems to be God's will there should be no children of your own. In that case it is your privilege to furnish a home and be father and mother to some of the homeless and motherless little ones. "Inasmuch as ye have done it unto one of the least of these (little ones), ye have done it unto me." Take a little homeless wanderer, that seems to be adrift in the world; and while you minister to its physical, mental, and spiritual wants, remember the promise that it is your privilege, in so doing, to minister to the Savior himself. Now for the home relations.

One reason why I felt in those years gone by that God called me to talk and plead in this direction of Our Homes, was because of the wonderful transforming power that the Holy Spirit made in our own home. Please do not understand me as conveying the impression that my home was an unpleasant one. God forbid! It *was* a pleasant one. It was a little paradise here upon earth; but I did not *know* it nor *see* it nor *appreciate* it till the Holy Spirit opened my eyes. An intemperate man once attended a series of revival meetings. Although he did not come out very strong for Christ Jesus, he said to me one morning something like this:

"Mr. Root, I do not know that I understand exactly what conversion is; but it seems to me I am getting a glimpse of it. When I go home nowadays I look at my wife and children with a new feeling that I never had before. I did not realize before what a good wife it has been my fortune to be with all these long years. I did not appreciate my children as I do now. Under the influence of this new life, every thing looks brighter and better; and I am filled with thanksgiving and joy that God has given me so much to be thankful for." This friend had got it exactly. When the Holy Spirit opens up and illuminates the heart, the recipient sees new beauties, new joys, and new causes for thanksgiving and praise that he never saw before. I hardly need tell you that skepticism and unbelief furnish nothing of this sort. There is a kind of skepticism, that perhaps there is no particular name for, that prompts one to think he does not have a fair chance in this world—that his children are not such as he has a right to expect, and the dear wife is not as *good* a one as he ought to have; in fact, that he is a great deal too good for the company God has—stop! stop! Such a man does not think about *God* at all. It is Satan, the old enemy of mankind himself, who is constantly making a man dissatisfied, and who is trying to get him to grumble and complain. When you take *God* into your home, his influence ennobles every thing. I do not mean that it blinds your eyes to the imperfections of others, or that it would induce you to relax your energies in setting to rights things that are wrong. On the contrary, the Holy Spirit is a constant stimulus to that which is better in *every* direction. It opens up to you a thousand ways in which you can make your wife and children not only happier and better,

but it helps *you* to help *them* to better things. And this holy influence is always contagious. It gets hold of the dear wife, and the little one that is scarcely able to walk or talk. It enables them to see better things in the dear papa, and to feel thankful for the father and protector that God has given.

Satan is opposed to homes, on general principles. He prevents people from getting *married*,* if he can, and then he breaks up homes and married life, if he possibly can do it. He who starts a home or builds a home must reckon on finding this great adversary putting in his work just as soon as the home begins to prosper. The principal point I wish to make in this talk is to the effect that we who constitute the home may constantly watch for this insidious foe, and keep him out. Since so much has been said about the conflict that never seems to be quite ended, about opening the World's Fair on Sunday, that old familiar text of childhood has been ringing in my ears—"Remember the Sabbath day, to keep it holy;" and it was yesterday, or the day before, that the ringing began to take a little different form, and it was something like this: "Remember the 'home,' to keep it holy." Sometimes it would be, "Remember the *marriage-vow*, to keep it holy." Again, "Remember the family ties, to keep *them* holy." O dear reader! do you fully realize how much depends on carefully guarding and watching over *your* home? Do you realize how it is that the perpetuity of our land of liberty depends upon how well and faithfully you guard it? The elements of secession and anarchy, crime and ruin, are sown and fostered and nourished—no, not in somebody's home, but in some place that has been perverted from what ought to have been a home. Only yesterday some fiend in human shape, or, worse still, a conspiracy of fiends in human shape, blew up and wrecked three different homes, with dynamite. These homes contained women and children. They were godly homes. Do you ask what caused it? Why, the fathers were godly men. They tried to enforce the law, or did enforce it, against saloons and the saloon business in the city of Muscatine, Ia.; and the murderous revenge was to blow them all up with dynamite. The fiends were going to teach the citizens of the United States of America that the venders of liquor were not to be *trifled* with. Perhaps they meant to say by this, "We will teach you to mind your own business, and let us alone, even if we *are* plainly violating both the spirit and the letter of the laws of the State of Iowa." My impression is, that these three fathers and the good people of Muscatine are not going to be "teached" worth a cent, by such measures. May God grant that the mass meeting that was instantly called to devise ways and means for hunting up the criminals may be successful. Let us all pray for that, and work when opportunity offers.

Our pastor told us in that sermon, that the minds of these little ones growing up around the hearthstone are like the sensitive plates used by photographers. You know they have them now so exceedingly sensitive that an impression is made in a fraction of a second. Instantaneous views are taken so quickly that a horse on the run is photographed as if he were standing still. Well, these little friends of ours—these buds of humanity—are sensitive plates. They catch impressions, and hold them. You can tell what sort of parents a girl has by watching her as she plays with her doll. If she scolds it and boxes its ears, she has probably had some experience herself in that very line. If she threatens to cut off its ears if it does not do so and so, it is because somebody has said the same thing in her hearing. Therefore, how great is the importance of being careful what we say or do! When the Holy Spirit came into our home, it made me gentle and kind, especially to my life partner. Next to the great God above should be the life companion who helps us to *make* our home. As the parents speak to each other, so will the children speak. Now, I have not only known this, but I have taught these things through Our Homes for many a long year; and of late I did not suppose it possible that any thing, even Satan with all his subtilties, could throw me off my guard. Alas for humanity! It is not many days since some trifling event occurred where my good wife and I happened to take different sides in the matter. It was just before supper. I was suffering somewhat from nervous exhaustion, and was in no frame of mind to talk, much less to discuss any thing. At such times I have for years, knowing this, kept still. A cup of milk stood by my plate. Had I taken a few swallows, and waited only a little time, I might have been in a fit frame of mind to talk. It is my disposition to push ahead, and I foolishly pushed ahead even then, when wisdom bade me not. It was not so much what I said, but my face was flushed. I was sorry in an instant. I would have apologized then, but I was not in a fit frame of mind to apologize. When we knelt by our bedside at night, however, I asked my companion's forgiveness, and I asked God to forgive me. But even after the forgiveness had been granted, I would have given a good deal if those few words I uttered had been unsaid. Our children heard them; and the fact that at least two of them were pretty well grown up made me feel all the sadder about it. At breakfast time I asked their forgiveness also. But there has been a feeling ever since, that I must have suffered in their estimation by that brief, instantaneous photograph of a deformity in my character. They may have had glimpses of said deformity years ago, and may have forgotten that it existed. Oh how glad I should be if it were possible to have *all* my friends forget, and forget *myself*, that Satan *still* has a hold upon me! It rankles in my heart to think that he may, at any unexpected moment, get a clutch on me again. Lord, help! If *parents* seem to decide that it is right and proper to speak harsh, unkind things to each other, what in the world is to hinder the *children* from learning to think that it is proper and right for *them* to be harsh and severe?

It is the parent's duty, not only to look out about the *example* he sets before the children, but to look after the children. The parent is the God-appointed guardian. Our pastor said you might as well expect a child to grow up right when you let it have its own way, as to expect a locomotive would keep the track and

* There is a paper published in a certain part of the State of New York that comes out boldly and unblushingly, and says in every issue something like this: "Pay no taxes; pay no rent; pay no interest to anybody; *do not get married*," etc. This vile sheet does not mean that we should live a life of celibacy—oh no! If you read a little of its pages you will find that it unblushingly recommends to everybody—"just help yourself." It just now occurs to me that the Devil himself is at the head of at least *one* newspaper in the United States. We might have been sure, on general principles, that he *would* start a newspaper if there could be found enough people to take it; and the fact that it is already running, indicates that it has not only found support but that the P. O. Department permits it. Anthony Comstock has already had the editor in jail, it seems, for said editor goes on about it in this issue that happened to fall into my hands. He is loud and bitter toward Uncle Samuel also, because Uncle Sam has had the effrontery to open the mails and decide what is too obscene to be permitted inside of the mail-bags. Well, this man comes right square out, and says, "Do not get married." Is it at all surprising?

do service if you pulled wide the throttle-valve and took the engineer from his post. The locomotive would go crashing through the land, bringing wreck and ruin, and, possibly, devastation and death. But the havoc that the locomotive might make would be mild in comparison to the average child that has its own way, and is entirely without restraint. This is a terrible statement; but I am afraid it is true. And there are children in our land who are growing up in that very way. If they have any property, the law appoints a guardian; but a child-tramp, going here and there hunting up a job, may have no guardian whatever, unless some good man or woman takes pity on him, and tries to be a guardian to him. A parent who is harsh and severe, and overdoes the matter in the way of exercising authority, is better and safer than the one who gives his child unlimited liberty and lets it do exactly as it pleases. Better any sort of restraint rather than no restraint at all. But this is no excuse for letting our lower impulses lead us to be unjust to children. "Ye fathers, provoke not your children to wrath."

A father came home from his work at night, tired and hungry, and perhaps feeling fretful and impatient. A bright new saw lay on the ground near the gate. The father meditated, "That boy is getting to be heedless and careless. He needs a good thorough straightening-up." As the boy came in sight the father commenced:

"John, pick up that saw and put it in its place. Haven't I talked to you enough about leaving tools lying around on the ground?"

"But, father—"

"Not a word, sir; do as I tell you."

The boy once more attempted to say something in his defense; but the father's anger had been rising, and he cut the boy short by saying, "Not a word, I tell you. Go upstairs and go to bed, and learn after this not to answer back when I reprimand you."

The boy was a chip of the old block, as a matter of course, and by this time *his* temper rose also. With the hot tears of anger coursing down his cheeks, he did as his father bade him, slamming his door as he threw himself on his bed, sobbing, and stung to the very core at his father's injustice. The father began to feel, too, after the boy was out of sight, that perhaps he had been more severe than the occasion demanded. A neighbor, who was at some little distance, heard the whole matter, and had by this time reached the spot. He was also somewhat excited, but he undertook to reprove his neighbor.

"Look here, Mr. Jones; you are making a mistake. If you look a little closer you will see that *that* saw is not yours at all, and your boy had nothing to do with it. A man left it there and is coming back after it presently."

What did the father do? Well, I suppose that, like you and me, he hated to own up that he had been wrong and foolish; so he tried to laugh it off, and replied, "Well, perhaps you are right about it; but if the boy did not need it *this* time, he will before long; and it will not do him very much harm if he did get his punishment a little in advance."

Because the father was ashamed to own up before his boy that he had made a mistake, and had been unmanly and cruel, he let the boy lie there on his bed, with his heart in just the right state to receive almost any prompting that Satan might whisper.

As our pastor told this story it almost made me start in my seat. I do not think I ever did any thing so unreasonable and cruel as the above; but different phases of the picture came home to me and rebuked me. Dear brother or sister, can it be possible that this little incident is a picture of the things that do sometimes happen in or about your own home? If so, may God help you. I know it takes hard earnest work and earnest prayer to keep yourself free from such mistakes and shortcomings as these; but "there is no great excellence without great labor." It is the price of wisdom. Daily prayer, night and morning, that you may be kept from such thoughtless sinfulness is not enough. You need to pray every hour; and when conscience whispers that danger is near, you need the little prayer, right on the instant, "Lord, help!" When the warning note is ringing in our ears, if we can stop long enough to utter mentally even those two short words, we are comparatively safe.

I am reminded right here of a little incident in the great business world. It was told in the *American Florist;* and I fear, too, that it was told by an editor who has little or no faith in prayer. Last spring, when there threatened to be a panic, owing to the scarcity of onion seed, some men of large capital undertook to buy up the visible supply in order to make a "corner." They found a seed-merchant in San Francisco who did not happen to be posted in regard to the market, and they had so nearly succeeded in buying his complete stock at some thousands of dollars less than its real value, that the money was already taken out and ready to be counted. He had not accepted their offer, and, to their great surprise, he said, "Gentlemen, before I conclude this bargain you will please excuse me for a very few minutes." He came back and declined to sell his stock of seed. They increased the offer, but he would not sell, even then. They were surprised at the strange behavior of a smart and capable business man, and employed a mutual friend to get an explanation as to why he changed so suddenly. The explanation was this: He retired to his private room, and asked God to direct him that he might not be a victim of any evil plan of those men. The result was, that he was impressed to make no deal with them whatever. I may not have got the above exactly as it occurred, but it was essentially as I state. The matter attracted my attention, and the editor of the *American Florist* gave us some further facts afterward. There seemed to be a chain of circumstances reaching out a good ways in different directions, hinging on this one deal; and the very men who were at first disappointed in not getting the seed, said afterward that the delay occasioned by the time our Christian friend was occupied in praying over the transaction, was a Godsend to *them.* Events afterward transpired, showing that his fashion of praying over important business matters, before committing himself fully, saved a good many people from losses, as well as the parties mentioned. The editor explains it by saying that it all came about by this trifling "hitch" in the business that was going on. Now, friends, you and I would have been better off in peace of mind, and perhaps money too, had there been some little providential "hitch" in our affairs just as Satan was getting us well under his thumb. And the way to bring about such a hitch is to stop long enough to ask God's help before you push ahead in any crisis. Especially do we need this little prayer in home matters; for it is not only true that "the hand that rocks the cradle is the hand that moves the world," but it is true that God's kingdom is to come here on earth, and his will is to be done here in this nation of ours, by the work that commences in a still and quiet way around the hearthstone, and in these homes of ours. May God's blessing and love and peace find a resting-place in these homes.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

PUTTING UP CANNED FRUITS AND VEGETABLES FOR MARKET.

HOW FAR IS IT PRACTICABLE FOR MARKET-GARDENERS AND BERRY-GROWERS TO PUT UP THEIR OWN SURPLUS?

So many have written, making inquiries in regard to this matter, I have decided to tell you what I know about it. One great obstacle in the way is, that it puts "too many irons in the fire" for the average gardener or fruit-grower. He may be a man of such ability that he could do very well as fruit-grower, as market-gardener, or as a canner, if he were to undertake either one of the three alone; whereas, if he should undertake to do two, or, worse still, three of them, at once, his energies and abilities would be so divided that one and may be all three would suffer. You know friend Terry's great point has been in attempting one thing, and in doing that one thing well. Mr. Terry is a farmer; but he has chosen, as his branch of farming, the growing of potatoes only. Of course, he grows clover and wheat also, but they are only secondary. Now, in order that he may have full swing on potatoes, and nothing to divert his interest and attention, and the same of his hired help, he has discarded even pigs and chickens, and, for the most part, the family garden; and he succeeds, and is not cramped or worried in succeeding. If you undertake to can your surplus to keep it from spoiling, you will likely be cramped or worried, and wish you had never thought of it. If, however, you have a grown-up family that would like to help, and stay around home, or near the old homestead, then it may be well to undertake it. Friend Cummins has four boys, all grown-up men, and I should say they are all of rather unusual ability. But even with all this help and unusual facilities he does very little in the way of raising his own tomatoes or corn or pumpkins, if I am correct. He grows tomato-*plants*, but he does it mainly that he may have nice plants, the right variety, and no *mistakes*, and have them at just the right time. Then he depends upon the farming community to furnish the product to run his canning-factory.

Well, let us see what we can do. Perhaps you raise tomatoes for market. Tomatoes have a good many ups and downs. They are liable to be worth a dollar a bushel, or more; and, again, they are liable, on very short notice, to be so plentiful that you had better take 20 cts. a bushel for them than to let them rot on the ground. If you push your whole product on the market, and try to force sales, you not only damage yourself, but your neighbors. In fact, we often keep the market up to 50 or 75 cts. by telling our customers that, if we can not get that price, we shall take them home and can them.

I need not stop to tell you any thing about canning them for home use in glass jars. We put up a good many that way every year, for our lunch-room. Sometimes we sell them around town. Where we want to save a lot of tomatoes from spoiling, or from glutting the market, two-quart cans are cheaper than any smaller size. The only trouble is, a small family may not be able to use up a two-quart can before it spoils, after opening; so if you are going to use glass cans, better have part of them one-quart to accommodate. Tomatoes in glass, if properly put up, should keep any number of years. The trouble is, a good many people can not be made to do it right. Many a good housewife, however, can tell you all about it; but somebody must superintend it who is interested. The average hired help will not take the pains necessary to make a sure thing of having every can keep.

Now, then, if you have too many tomatoes to put into glass, you will want to put them in regular standard tin cans so they can compete in the market with the product of the great canning-factories. As a rule, I do not believe you can do it to pay unless you put up a factory, and do it on a large scale. The trouble is, two-pound cans of tomatoes are often sold at from 90 cts. to $1.00 a dozen. This would be 7 or 8 cts. each. The average tinsmith will charge you 4 cts. each for your cans; and you can not put in the tomatoes, and solder them up, for much less than 4 cts. more. You can try it if you want to; but I think you will "get left." If tomatoes are selling, as they are doing just now, at $1.25 a dozen, so that you get 10 cts. or more per can, you can very likely do it, especially if you have a family of children who want something to do. Girls and boys work nicely together at this sort of work.

The first thing is to get the cans. You can buy tops and bottoms by the barrel for about 1½ cts. per can. The piece of tin for the body, and the work in making up the can, will cost you about as much more; so you can not very well make the cans for less than 3 cts.; and unless you make a good many of them they will cost you 4 and *may be* 5. Now, here comes an illustration of just what I want to teach. There are great factories that will make cans by the carload, all complete, for about *2 1-2 cts. each*, or as low as *you* can buy the materials, to say nothing of the work. Friend Cummins has some of the nicest automatic machinery in the world, the result of years of study and labor, and much expense; but he told me these factories for making cans had worked the thing down so fine that, if it were not for the freight on such bulky goods, he would stop trying to make his own cans, letting all his expensive machinery lie idle, and buy them by the carload. One other advantage in making his own is this: He can always be sure of having cans ready when favorable weather gives a great crop of tomatoes. Waiting for a carload, or for a train of cars loaded with cans, during the height of the season, would be rather bad business for a canning-factory. So you see there are several things to consider. Perhaps I might say, for the encouragement of those who would really like to make their own cans, that there is quite a room for enterprise and skill in this matter. I have mentioned to you the incident of can-making in California, when they had a large shipment of honey to go to England, to put up in tins. Friend Wilkin hired the best tinsmiths he could find, and the most expert men in soldering cans; but his own son-in-law, J. F. McIntyre, at that time but a boy, after a few days' practice and intelligent study of the whole matter, put up more cans, and did them well, than any old tinner they could get hold of. I do not know but our young friend had his eye on the boss's nice-looking smart daughter at about that time. Such things are *sometimes* a powerful incentive; and it is all right *too*.

Now about putting up the fruit. I do not know very much about the way canning-factories work. Circumstances, perhaps, must decide something in regard to this matter. Two years ago we put up about 3000 cans of tomatoes. Most of them we raised; but when great "beauties" (they were Livingston's Beauty) were offered in market for only 20 cts. a bushel, we decided to buy them and can them. Had it not been for the advance in canned tomatoes this spring, I do not know how we should have

got our money back that we put into them. Never mind. We took the fruit down into our wax-room, where we make foundation. One of the large wooden vats was filled with water, which was set to boiling by means of a steam-pipe. The tomatoes were then put into baskets made of poultry-netting. These were dipped into the boiling water just long enough to make them peel nicely. Then the women-folks peeled them, took out the seeds, and filled the tin cans plump full of solid meat. This being done, one of our tinners soldered on the caps. Before doing this, a small hole was pricked in the cap with an awl. This is to let out the steam. The cans were then put into the wired baskets again, say a dozen in a basket, and lowered into the vat of boiling water. When they had boiled long enough so the entire contents of the can were boiling hot (say 10 minutes), thus expelling every bit of air from the can, they were lifted out and a drop of solder was quickly put on the vent-hole, with a soldering-iron and again boiled for about an hour.* After they were cold they were ready to be packed away. You should put them where they will not freeze, and at the same time where there is not dampness enough to rust the tin. We just lost thirty or forty dollars by storing our cans in a damp cellar. Friend Cummins has his stacked up from floor to ceiling, right close around the hot-air furnace that warms his spacious dwelling-house in which he lives. The furnace, of course, is located right on the ground in the cellar. I think there was a cement bottom to the cellar. But this whole basement was as dry as a chip during some of the dampest and wettest weather we had last spring.

The process of canning corn is somewhat different. I believe it is boiled a good deal longer; in fact, this second boiling is something like two or three hours. Some factories, I am told, put in some sort of chemical to keep the corn from spoiling; but I am told nothing of this kind is needed if the work is done right. It just now occurs to me, that, as a rule, the owners of canning-factories are not usually disposed to give away their secrets and tricks of trade; and this is all right, for it is their privilege to keep their business to themselves if they think proper. I do not suppose anybody would object to what I have given away, for it is mostly pretty well known already.

Very likely many of you can save your tomatoes, and perhaps small fruits, in a way that you can get your money back, if you sell your stock at *retail*. Put up a good article; make your reputation for it; put your name on the can, and then take your product around and sell it at retail. We have canned goods on our market-wagon every day in the year. I would not put labels on until ready to sell the goods; then they will be nice and clean. You can buy lithographed labels for tomatoes, corn, and many small fruits, of the label companies. They are just right for the cans, printed in bright waterproof colors, representing fine specimens of the contents of the can. There is a blank space left for your name and address, that can be put on at any printing-office. Labels for 2-lb. cans cost about $2.00 per 1000.

Now, if any of the friends who have had experience in this matter of canning — that is, canning for the markets — in tin, have a mind to give us any hints, we shall be glad to hear from them. The great factories have what they call process kettles, and other arrangements, so the filled cans may be heated up by running a small carload right into a large steam-tight iron box, where steam is let in so as to do all the heating and cooking under steam-pressure. There is considerable lifting connected with canning, especially where it is done on a large scale, and we want to manage so as to have no useless movements, or lugging stuff around needlessly. Arrange your whole plant so that a wagonload of tomatoes may be brought as near as possible where it is wanted; then move on trucks, wheelbarrow, or some equivalent, your product right along until it is dropped in its finished state at some other place, where it can be easily loaded on to a wagon. Arrange things so as to spare the women-folks all kinds of fatiguing lifting. Have convenient tables made to work on, and clean up all the refuse every night. Take it out on to the ground, and plow it under, and the peelings will be worth, for some crops, almost as much as manure. You can make the juice into ketchup, and put it up in fruit-jars or bottles. If you make a good brand of ketchup it ought to pay as well as or better than the tomatoes. If you have more juice than you can use for ketchup, give it to the pigs to drink. If you have no pigs, may be you had better borrow some. If your tomatoes are carefully grown from seed purchased from some reliable firm, of some of the standard sorts, you can save the seeds and get quite a good sum of money for them, providing—what do you suppose I am going to say now?—*providing* your *reputation* is so well established that a good seedsman can readily find out whether or not it will be safe to buy your seeds. Seedsmen are very careful and cautious, and they *ought* to be. You know how I got my fingers burned by buying Ignotum seeds. Of course, I expected to buy only of those who had received free packets of seeds from ourselves; but in some way or other some other kinds of seeds—perhaps not more than an ounce or two—got into the lot; and before I knew it a dozen or more friends had been wasting their time in raising something they did not want, and something that was not Ignotum at all. Here is an illustration of the value of a good name and of a good reputation. Where there are a dozen people from whom I should be willing to purchase seeds, feeling sure there would not be any blunder about it, there are *hundreds* of people—yes, good people too, of whom I should be *afraid* to buy. They might mean well, but I should be afraid of their heedless habits and careless way of doing things.

* I almost forgot to say that green hands will be pretty sure to make more or less leaky cans. Now, the test of leakage comes in right here: After the vent-hole is soldered up, just as soon as the can is put into boiling water, and begins to get hot, bubbles of air will be seen issuing from the leak, and this indicates that the can must be fished out and the leak soldered up. Another thing, after the cans are put away, if the work has not been properly done some of them will begin to swell and bulge out. This indicates that fermentation is going on inside. If the cans are sorted out just as they begin to bulge, the contents, frequently, may be used at once on the table; or, if you want to take the trouble, they may be canned over again.

WEEDS, SMALL BOYS, ETC.

As a rule, very few boys like to weed the onion-beds, nor any other plant-beds, for that matter. Now, I think the nicest work in the world, especially after a shower, when the weeds come out nicely, is this same work of weeding. I like it because it does me good to see the plants boom when the thievish weeds are taken out of their way so as to give them elbow room, and at the same time stop them from stealing the rich plant-food that belongs to the plants. The boys as a rule, however, have little sympathy with me in the matter. A boy will wheel sand or unload a car of tile, and he will work, while doing it, like a young

beaver. Sometimes by his quick movements he will for a time do almost as much as a man—yes, even if he has only a third of a man's pay. Of course, you can not expect him to work as many hours on a stretch as a man does; but if you understand a boy, and boy nature, you can do the boy good and he will do you good. Let us now go back to the weeding.

At first, when certain boys began to loaf, and loll out their tongues, or tell stories when I set them to weeding, I reprimanded them, and made up my mind they were not very *good* boys; but when my very best boys began to get this sort of "disease" whenever they were asked to weed the beds, I began to think that, perhaps, there was something about the work that we ought not to expect the average boy to like. Sometimes when they want work badly they will go to work at the weeding with a very good grace; but by and by they lose interest and enthusiam, and get the same fashion they see others around them following. One little fellow frankly admitted that he did not *like* weeding; but he said that, when there was no other work to do, he would do the best he could at it.

Well, I finally began to wonder if there were not some way to get rid of weeding. You may say, "Why, yes; have rich soil in your plant-beds that does not contain weed seeds." But, alas! if you use large quantities of stable manure, it is impossible to avoid getting clover seed and grass, and ever so many other kinds of less useful weeds. By the way, did you ever see what a wonderful propensity a clover-plant has to send its roots down in good soil? On our plant-beds a little clover-plant, with only three or four leaves, and not over an inch high, will have a branching root almost as long as your hand. Its first business seems to be to get away down where it can pump up the moisture and fertility. Well, since I have been using the sand I have got hold of a plan which comes pretty near being a remedy for weed-pulling. Fix the bed as I have been telling you, and then put half an inch of sand all over the surface. Sow your seed in the sand, or just about between the sand and soil, and most of the seeds will be up before the weeds are. There are no weed-seeds in my lake sand at all; therefore the weeds have to get up through the sand before they are visible. The seed does not have to send up its shoot so far, and therefore it gets a little ahead. However, by the time your plants begin to put out their second leaves, the weeds will begin to get up through. It is best to let the weeds and plants grow all together until the plants are large enough to transplant safely; then pick out the plants and leave the weeds. These same boys who dislike picking out the weeds will take up the plants and plant them out in nice rows, and give you a perfect stand of plants—that is, after they have been trained a little. This transplanting with poultry-netting frames, or even with the notched strips of wood shown in the tomato book, makes the work a regular mechanical operation; and when it is done it looks handsome and workmanlike. After the plants are all out, dig the beds all up and then run the weeds, dirt and all, through the sifting-machine shown in the tomato book, and your weeds are all shaken out of the dirt, and underneath the fine soil, where they are worth as much, on a small scale, as Terry's clover that he turns under; then put on some more sand, and sow more seeds, or put in plants. When the plants get big enough to shade the ground, all trouble from weeds is virtually at an end. If a few do get through, they can be easily "yanked" out.

You may say this is a great deal of trouble and expense, making up the beds so often. Yes, it is; but it is a great deal cheaper than weeding. And what do you suppose we get for the use of a piece of ground, during this busy month of May? Well, we often sell nice seedlings for 20 cts. per 100; for onion-plants we get only half as much; but I have frequently taken three or four dollars for the plants occupying the space of a single sash for 30 days; yes, sometimes with favorable conditions I have, in 15 days after transplanting Wakefield cabbages, taken up every plant and shipped them off, getting two or three dollars for the plants that grew under a single sash in only 15 days' time. To get these prices, our plants must be nice ones. I do not mean that they must have nice-looking *tops*. Good gardeners care a good deal more about a big bushy *root* than they do about a fine-looking top. A great big rank green top, with almost no root at all, is of little value. If you make it grow it will be a long while before it amounts to much. Some time in April we had some tomato-plants in our greenhouse, once transplanted, that were beginning to crowd so I knew they must have more room somewhere. I moved them out into a plant-bed to be covered with sash, and gave them plenty of room. The weather was so cold, however, and there was so little sunshine, that they almost stood still for pretty nearly a whole month. The foliage had very much changed in color, it is true, and it lost its light bright green look, and had assumed a dark, tough-looking hue. It looked as if they would stand frost, and I guess they would have stood a light frost without injury. I thought likely they were making root at this time; but when I came to take some up for a customer, I was greatly surprised to see a great mass of bushy roots, about the shape and size of one's double fist. The little plants at the top looked almost insignificant; but the roots were new and thrifty-looking. Such a plant would almost grow if you were to throw it out on top of the ground; and with the most indifferent planting it would take right hold and boom at the first bit of sunshine in summer weather. Such plants will build up a man's trade; but long spindling plants, with all top and little root, will disgust a prudent gardener. This desirable result is secured by frequent transplanting. When orders are rushing we can not well get just what we want for customers; besides, if we do not get a purchaser at about the right time, the doubly transplanted plants will be getting too big to send away. But I tell you, there is a chance for somebody to build up a big trade in furnishing nice plants every time. With such a greenhouse as ours, with sufficient capacity, and plant beds and sash to match, it could be done, even with such a spring as we just passed; and by frequent transplanting we can get rid of weeding; and I do believe it is *cheaper* to transplant the whole bed, many times, than to pull the weeds out.

Some of you may say, "Why, look here, Mr. Root, these chemical fertilizers you despise are going to help you out in the matter. Get some good soil that has not been seeded to weeds; mix it with your lake-shore sand, and then enrich it with guano or chemical fertilizers, and then you won't have any clover or grass seed, nor any thing else, to bother it; and for plant-beds it would surely pay instead of using such quantities of stable manure." Well, perhaps it may. I hope so; but if it is guano that gives the chemical manures their value, I say guano should have the credit; and it should be our privilege to buy guano without the other. I should like to see chemicals like nitrate of soda produce a crop on ground that is too poor to give any crop otherwise. I have some faith in bone-dust; but that, too, is rather expensive compared with stable manure at 50 or 75 cts. a load—the price we pay here in Medina.

THOSE UNDERDRAINS, ONCE MORE.

On the 15th of May it began to rain steadily at 5 o'clock in the afternoon, and I am told that it did not stop a "minute" for between 50 and 60 hours. It did not rain very hard any of the time—that is, not as hard as it did a year ago; but there was more or less water falling all the time. My heart went down as I saw our cultivated fields getting more or less saturated, and settling down like a brick. Our creek bottom was flooded, and our strawberries were under water, more or less of them, for over 48 hours; but they seem to have stood it pretty well. It was a comfort to me to watch the underdrains as they steadily poured out their surplus. The quantity of water was not sufficient to wash out the fertility, as it did a year ago, and the ground is drying up faster. I was wondering how friend Terry managed to get in his potatoes, and have every thing exactly right, as he so strongly urges. I guess he is having a little trouble too, for he says, in one of his letters:

We are having a terrible rain. It would be harder to carry Huber across my *potato-field* to-day than it was in the swamp. T. B. Terry.
Hudson, O., May 17.

Our plant-beds come in quite beautifully just now. The paths are all from four to eight inches below the surface of the soil in the beds, and so we have the most complete underdrainage and overdrainage. But I suspect it saps the fertility of the soil to be leached so continuously. Our onions that were started under glass just seem to laugh at so much rain. The temperature, too, was low, hardly varying from 45 to 50 degrees; but notwithstanding this, the onions made about the biggest growth in 48 hours I ever noticed. Tomatoes, and all tender vegetation, just about stood still—that is, the tops did; but I rather think they were making roots some. But many of the hardy plants, especially those that love great quantities of water, made a wonderful growth—such as asparagus, rhubarb, onions, and some of the most robust varieties of strawberries.

THE GOVERNMENT AND THE LIQUOR BUSINESS.

IS OUR GOVERNMENT A PARTNER IN IT? ARE WE IN DANGER OF BEING DISLOYAL TO OUR GOVERNMENT?

[After writing as I have in regard to the course our government is taking in the matter of spirituous liquors, I rather expected somebody would supply some missing facts in the case that I had not yet got hold of. I was disappointed, however, in receiving nothing, or next to nothing, in defense of the government. Quite a few letters came, it is true, saying I had not told half the truth, and I began to feel that things were certainly getting desperately bad, or else nobody who reads Gleanings, who knew, cared to set us right. Recently, however, I have received a very kind letter from one who not only loves temperance, but who loves Christ Jesus, as you may gather from his closing sentences; and even though he has not told us all the truth, I feel like saying, may God be praised that so much can be truthfully said in defense of our government, and in pointing out more clearly the difficulties it has to encounter. Permit me to say that I never meant to be disloyal, or to do or say any thing that might savor of rebellion against our free institutions. I want to straighten up and build up, rather than to tear down. Here is the letter:]

On page 222 of Gleanings we find some severe comments by the editor on the relation of the United States government to distillers; and on page 296 G. M. Doolittle has also something to say on the same subject. Both of those writers condemn in severe terms the course the government has taken in regard to distilleries.

Mr. Root maintains that "government distilleries are out of Uncle Samuel's line of business," and Mr. Doolittle asserts that the government has entered into a bargain with the whisky interests, by which, for funds furnished, it would give a mortgage on its boys, and in very strong terms maintains that this "Christian government has nationalized the drink business and inaugurated a system of partnership with the accursed liquor-traffic."

Now, I have no desire to cross swords with two such notable men as A. I. Root and G. M. Doolittle for the sake of controversy; but I submit that it's a very serious thing to impute evil intent to the government, and the laws under which we live. No good can come from such intemperate language. The facts in the case do not warrant it. It is one thing to condemn the government for the course it has seen fit to take in regard to the whisky interest, but quite another thing to propose a different and better way. On this latter point, both of these men are silent.

Let us consider a few facts. Many, very many, men are born into the world with a propensity to evil ways, and the drink habit is one of the strongest of these propensities. This thirst for strong drink creates a demand for it. There is no real demand for any thing, good or bad, in this world, that some one or more do not stand ready to supply. To supply the demand for strong drink, distilleries are built for its manufacture; and so long as this demand exists, its manufacture will go on. It can not be stopped. It never has been, and it never will be so long as this insatiate appetite for strong drink continues.

Now, all governments must have a sufficient and steady revenue, or they could not be maintained. I know of no civilized nation that does not consider vinous and spirituous liquors as proper objects of taxation. The United Kingdom, free trade as it is, yet collects an immense revenue from wines and spirits; and this government, as early as 1790, enacted excise laws which taxed spirituous liquors; and the opposition to the collection of these taxes was so great in Northern Pennsylvania that Washington deemed it necessary in 1794 to call out 15,000 militia to quell the disturbance.

The right to make laws, to "levy and collect taxes," must of necessity carry with it power to enforce those laws; and if unusual means have to be employed to collect the liquor tax, it is only evidence of the unscrupulous nature of the whisky interest.

The situation, as I understand it, is this. The government is trying to collect a legitimate tax. There is no compact with Gambrinus, or the "other fellow," and no "mortgage on its boys." There is no sentiment in taxation.

I am no advocate of the liquor-business. I agree with Mr. Doolittle, that it stands in the way of the advancement of God's kingdom on earth, as do many other vices nearly if not quite as ruinous. Now, what shall be done to counteract the appetite for strong drink? I know of no remedy that does not apply to all vices and evil habits that afflict mankind. Laws which tax and hamper the liquor-interests, doubtless do some good. The rules of many business interests, which refuse employment to men addicted to the drink habit, has a salutary effect; the efforts of temperance societies are most potent means of reform; and the new gold

cure for inebriety, from all accounts, is working many remarkable cures.

But such is the magnitude of the evil that all unaided human efforts must fall very far short of meeting all the requirements of the case. The only potent and effectual cure for this and all the other evils that afflict the race is the complete and final triumph of the gospel of Jesus Christ. This may seem slow to those reformers who look for immediate results; but it is the divine plan. "There is joy in heaven over *one* sinner that repenteth."

Allegan, Mich. JULIUS TOMLINSON.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.
Illustrated SEMI-MONTHLY
36 PAGES 7×10
$1.00 PER YEAR

At thy right hand there are pleasures for evermore.—Ps. 16:11.

Do not fail to read Woodchopper's article in this issue.

THE first number of the *Bee-keepers' Enterprise*, published at New Haven, Ct., is out on time, and fully justifies our previous expectation. It is well printed, and shows good taste in its make-up.

How natural it is, when one is giving the exact requisites of a good bee-hive, that those requisites, when set in order, describe exactly the hive used, recommended, and sold by the describer! No crime in this. It is just a feature of human nature. Don't be offended. We are not hitting at any one in this issue.

So far we have had a rather peculiar spring. First it would be rather hot, then cold and rainy for quite a long period of time. Fruit-bloom, so far, has not proven to be any thing extra—indeed, while it was out the weather was cool and rainy. There has been an unusual amount of dandelions, especially upon our lawns. We like to see a large profusion of them in pasture lots; but somehow or other we do not like the looks of them on an otherwise nice lawn.

MR. ED. BERTRAND, of Nyon, Switzerland, has mailed us a copy of his bee-book, "Conduite du Rucher" ("Management of the Apiary"), translated into the Flemish language under the title of "Bestier der Bieënhalle." It has been printed in French and German, and will soon appear in Italian and Russian. We have had a call from Cuba for a bee book in Spanish; but as we do not know of any we can not send one. We would suggest to Mr. Bertrand the wisdom of putting his work into Spanish also.

NEIGHBOR RICE, of Seville, has just brought us another load of bees. He wintered in the cellar, and in large two-story chaff hives. As he has always wintered very successfully with the absorbing cushions, both for cellar and for outdoors, he saw no reason for changing. His bees during the past severe winter came out as well as usual; and the result is, quite a number of nice bright strong colonies of Italians. The colonies that were put into the cellar have their usual summer entrances, but have a large chaff cushion on top, the whole held down by a sort of wire-screen cap. This wire cloth prevents bees from getting out at the top, and allowsl the "sweat," as he expresses it, to rise and pass off.

SINCE our editorial on page 363, more testimony has come in on the question of sealed covers. The preponderance of evidence now, taking a birdseye view of the whole, is quite decidedly in favor of absorbing cushions as against sealed covers. We desire to thank our friends for so kindly and so promptly responding; and, so far as we are concerned, the matter is settled in about this way: Sealed covers in outdoor wintering, protected by packing material, will do very well in the majority of winters; but during severe ones, the absorbing cushion (hives packed otherwise the same) seems to give the better result. We shall continue to give absorbents the preference, just as we have always done in our A B C of Bee Culture, and elsewhere where we have given advice to beginners.

PERHAPS some of our readers may think we are giving Aikin Bros. & Knight, in Trade Notes, a rather "big free ad." Well, if it is such it is entirely unsolicited on their part; and while we do not subscribe to *every* thing claimed in favor of their hive and system, we sincerely believe there are some good points in them, especially the non-swarming feature. And speaking of non-swarming, it may be well to say that we should not place our hopes too high, as so many times we have been on the eve of discovering a plan that would absolutely prevent swarms, and convert the swarming mania into a mania for honey-gathering, but over and over again we have been disappointed. In the present instances, we sincerely think the non-swarming methods proposed by Langdon, and Aikin Bros. & Knight, *promise* to accomplish more than any thing else we have before examined.

YES, there does seem to be a gleam of hope for the prevention of swarming. It appears to us that H. P. Langdon and Mr. Knight have been working upon the same principle, each without the knowledge of the other. Although both use a different appliance for accomplishing the result, both find the principle to be a success; namely, the alternate turning of the working force of two separate and contiguous colonies from one hive to another, in such a way that it impoverishes the one and strengthens the other, and at the same time keeps the working force of both in one super or set of supers. If we are mistaken as to the same principle existing in both methods, we should be too glad to be corrected. How often it happens that valuable inventions are evolved almost simultaneously by several persons! Take, as an example of this, the cold-blast smoker and the automatic hiving-devices that seemed a year ago to be so numerous and so simultaneous in their appearance that it was hard to tell who really enjoyed priority.

THE CRANE AND CORNEIL SMOKERS.

SINCE our last issue we sent and got a Corneil smoker. We find that it is quite a little larger in size, both as to the bellows and fire-cup, than our regular Crane smoker. The Corneil works very nicely, and has indeed a very strong blast; and after trying it we were for the time being ready to confess that it was ahead of the Crane; but on comparing it with the Crane of smaller size, using the same effort on each bellows, we found that each sent a blast of smoke about the same distance; and that, when both were crammed tight with fuel, the Crane was considerably ahead. If the latter had been of the same size as the Corneil, the result would have been much more marked in favor of the Crane. Now, in saying all this we have endeavored to be just as fair as possible, putting aside any

interest that we may have in one of the smokers; for, as we have said before, we always want the truth to prevail, no matter where it cuts; and if subsequent developments prove that we are wrong, we will back down.

P. S.—Since writing the above, the following has come from E. E. Hasty, and will explain itself:

Friend Ernest:—I see by last Gleanings, page 405, that you, as well as the rest of us, have overlooked the main point in Corneil's induction smoker. Really the thing is simply an economical device for transforming *speed* into *volume*. If we should try to do the same thing by greatly increasing the size of the orifice we should have each puff all starting and stopping, and no steadiness to it. So far as a current of air moves by its own momentum, it must of necessity suffer a heavy percentage of loss in getting through a filled smoker—so many collisions and so many sharp turns to make. Whether a certain speed and volume would give the minimum per cent of loss, as compared with half that speed with twice the volume, is a very legitimate subject for experiment. Mr. Corneil's experiments seem to indicate that the latter is very much the more economical. In fact, our unaided thoughts would probably lead us to the conclusion that a slender stream of air moving at a very high rate of speed would lose over 90 per cent of its force in getting through, while a more voluminous and slower stream might get through with a loss as small as 50 per cent.

Certainly the experiments should be repeated in other hands, and the Crane smoker should have its fair show; but all the while let us remember that arguing that a thing can not be, when it actually *is*, rather befits an ecclesiastic of 1493 than a practical man of 1893. Fraternally, E. E. Hasty.

Richards, Ohio, May 23.

We are open to conviction, and in the mean time shall await further results from S. Corneil. We have to-day sent him one of the latest Crane smokers. Some time between now and our next issue we hope to make a Corneil smoker, using the same bellows and the same fire-cup as the Crane, but putting in a blast-tube as we find in the Corneil, then we can compare the blast of the two smokers on an exactly equal footing.

Later.—After writing the above we made two smokers, exactly alike, both on the Crane line, but differing in the manner of communicating the air from the bellows to the fire-cup. Both have the same-sized holes in the grate; the same-sized bellows and fire-cup; both curved nozzles, and mounted on the bellows in the same way, with the exception noted. We performed the experiment by blowing upon some nails lying upon a bench, before several of our workmen, using the same effort on each bellows; and the result in every case was, that the Crane was ahead. After loading the two equally, or, more exactly, packing the nozzles of each tight with handkerchiefs, the Crane was very decidedly ahead in strength of blast; in fact, it made very little difference whether it was loaded or not. The experiment was tried by two of our men, with like results.

LOOK OUT FOR HIM.

Be careful how you send money to A. D. Ellingwood, of Groveton, N. H. He has not only received money for work which he solicited, and made no returns, but he damages those who intrust him with orders, ever so much more than the money amounts to. As an illustration: He solicits the work of printing catalogues for beekeepers. After he receives the money he keeps putting his customers off, and finally does not answer at all; and the consequence of placing some faith in his promises is, that our friends are prevented from getting out their catalogues in time to be of any service to their customers. In some cases, after having delayed the matter until the catalogue was of but little use, they finally, in desperation, paid over the money to have the work done elsewhere. We have been corresponding with him for some time past, and have waited for him to return the money, which he has agreed to do; but as he does not do any thing but disappoint and vex good folks, we now make good our *promise* to *him*, and warn people against sending him any more money. One of the saddest things about it is, he seems to be justice of the peace in his own neighborhood, and may be, in some respects, a very good sort of man. The complaints from different ones, for months, can be produced if need be.

THE OLD-FASHIONED TWO-STORY HIVES VERSUS THE NEW AND SMALLER HIVES.

There was some ta k in some quarters, to the effect that the large two-story chaff hives were things to be relegated to the past; but during the very cold winter and inclement spring just past, the "old reliables" have shown that they are not to be lightly esteemed. Reports from all quarters seem to show that colonies in large chaff hives, with loose chaff packing on top—no sealed covers—have wintered their colonies the best. No, no! let us not be in too great haste to cast aside those old devices that are true and tried. Big chaff hives are cumbersome and unwieldy; but ours, that have been in use for the last ten or twelve years, are practically as good as new; and we see no reason why, with an occasional coat of paint of pure lead, they should not last ten years more. The original cost, divided by 20, makes the price insignificant; and as to their being cumbersome, the majority of ours have stood in the same location year after year, it being unnecessary to move them. These hives have their legitimate and proper place. Where it is not necessary to move bees, and where the winters are not so severe but that the outdoor method can be practiced with success, the large chaff hives are a good investment. But one who moves his bees from one apiary to another, and who winters in the cellar, had better use the single-walled hives; or, preferably, the small one-story chaff.

N. B.—If there is any thing in the above that conflicts with our former published statements, all right. We want the *truth*, even if we do have to cross our tracks.

PATENT-MEDICINE ADVERTISEMENTS IN THE READING-COLUMNS OF YOUR HOME PAPER.

Here is what the Philadelphia *Farm Journal* says about it:

We do not remember ever having seen so many trashy advertisements in the newspapers as there are to-day. Miserable lies are told, right on the editorial pages, about some so-called wonderful cure of the man whose portrait is given. Why not give the quacks the entire paper? The *Farm Journal* does not regret its rule, which for fifteen years has never been deviated from, excluding quacks from its columns. While we probably cut out six or seven thousand dollars a year, we think it pays to give our readers a clean, decent paper. What do *Our Folks* think?

And here is what A. I. Root has to say in the matter: Every editor who gives place to these pictures of people who have been cured by "almost a miracle" is obliged to say, "We believe it is true," or something in substance amounting to the same. Unless the editor of the paper will do this, the proprietor of the swindle will not give him a job. He must sell his good name or else he can not get the large sum of money that these chaps offer. I know, because the matter has been presented to me. These fellows say, "You must put the advertisement just where we tell you to put it; you must say the exact words we tell you to say; in fact, you must have nothing to say in the matter whatever, and we insist on saying what we have to

say in the advertisement. Unless you do this you can not have our patronage." In other words, the editor is to sell himself, body and soul — his influence, his reputation, if he has any, for which he is to receive so many cents per line, or inch of space. You may say that all periodicals are accepting these miraculous-cure advertisements, and that everybody understands it, and so nobody is deceived. My good friend, when the editor of a newspaper heads an article in the reading-columns with "Almost a Miracle," and says, toward the close of said miracle advertisement, "We believe it is true, every word of it," are none of his readers deceived? If not, why then does the medicine-man pay hundreds or thousands of dollars for the privilege of making the editor say just what he tells him to say?

THE VARIOUS BEE-CANDIES FOR MAILING-CAGES, ETC.; THE ADDITION OF ANY QUANTITY OF EGG IS DELETERIOUS.

From some preliminary tests that we have made with the various kinds of bee-candy for long-distance shipment, we have come to the conclusion that, while the addition of the white of an egg, as spoken of on page 167, to powdered or confectioners' sugar, makes a soft nice candy, it does not answer at all the requirements of a bee-food. We find, by tests, that such candy will keep soft for several weeks in a nice moist condition; but so far it kills the bees every time. We then tried making candy, taking confectioners' sugar, with equal parts of the white of an egg and honey, enough sugar being mixed in to make a stiff dough. For a time at least we thought we had struck the *ne plus ultra;* but every cage of bees which we have tested with this kind of candy, in a few days shows a lot of dead bees. We therefore conclude that the white of an egg, even in a small quantity, is decidedly detrimental. We shall continue to test the matter in a small way; but at present we know of nothing better than confectioners' sugar and first-class honey, mixed into a stiff dough; and we are inclined more and more to the belief that it is the *honey* which the bees are able to extract from grains of sugar, that is the real food element, and that which sustains life in the cage. With almost any cage of this candy, the dry particles of sugar will rattle out. We believe it was Doolittle who made this or a similar suggestion some time ago. Possibly he may be able to enlighten us further.

TAKING PAINS TO AVOID MISTAKES.

A few days ago a friend went out into the woods to get some basswood-trees. They were to be from ten to fifteen feet—not less than ten nor more than fifteen. I told the man to take a ten-foot pole, but he said he could guess near enough. But I remonstrated, urging that we had had some sad troubles just from that very fashion of *guessing* at the height of basswood-trees. I told him we could get him a pole in a minute or two; but he said he could measure on his hands as well as with any ten-foot pole. I felt sad and discouraged as I saw him drive away, because so much of my life is made up of trying to correct and make good the mistakes and blunders of other people. In the afternoon he came in with a great two-horse wagonload of trees. The order was for 50 basswood-trees, and they were to be shipped to New Jersey. A great part of them were over 20 feet tall, and the trunks of some of them were an inch or two through. It took an extra half-day to get a box to ship them, and perhaps the trees may be a great deal larger than the man wants. *Some* men would be satisfied to pay extra freight in order to get bigger ones, and some wouldn't. When I told him about it he said he was sure there were none of them more than 15 feet high. Trees exactly according to order would have been easier to dig, much lighter to box up, and perhaps more likely to grow. We chopped them down to 12 and 15 feet, and fixed them up the best we could; but it was not just what the man expected or wanted.

Again, Dr. Mason ordered a log house made of beeswax, to be exhibited at the World's Fair. He saw the man who was to make it, and I supposed that there was a perfect understanding as to what he wanted. I have just learned that it has not as yet been on exhibition, because it was made twice as large as ordered, and it would not go into the place assigned to it.

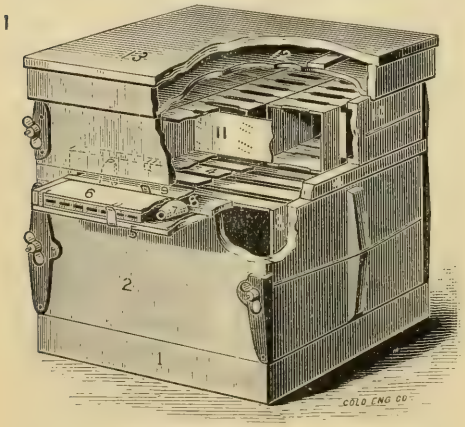
Once more: I wanted some boxes or cases to shut up our hot-bed sashes from wind and storm and breakage during the summer time. They are to be stored right between the ends of the beds, where they are to be used in the winter time. I asked the man who made them to take the dimensions carefully, and have them so they would just clear the sashes, both lengthwise and sidewise. I think I asked him to take a stick and measure carefully, because I wanted them just right. They are just right sidewise; but they are two inches longer than necessary lengthwise. Well, two inches is a small matter, and the extra amount of lumber would not cost any thing to speak of. What is the use of being so precise? I wish I had time to explain right along all day why some things must be exact. Sometimes two inches makes a difference. In this case our paths are only 16 inches wide, as you remember. The thickness of the lumber, and the necessary "play" will take out about three or four inches from the 16. Now, you take out two inches more, and you have only an eight or ten inch space to squeeze through when you pass the cases of sashes. You have to get through these passages day after day, very many times, and these cases will probably last a good many years. How much money would it be worth to have that two inches, where space is so needful? You may say I should not work so close. But, my friend, the ground where our hot-beds are cost me $2000 an acre; and with the exhaust steam and the piles of manure, we want every available inch for raising plants. These mistakes of things not being made correct and according to order, and the consequent refusal to receive work, are happening every day. We see it in all kinds of business. It estranges friends and makes lawsuits, unless somebody is so good-natured as to swallow the disappointment and give up expecting accuracy or comfort in this world of ours. For many years I have *begged* of people to pick up a stick and cut it off the length they want a thing to be made; but they laugh at me, but afterward they grumble and get mad when the carpenter or somebody else dosen't do as they told him. If you want to give two dimensions, saw off your stick to the longest dimension, and then cut a notch for the shorter one. If you want to take the dimensions of a box or the inside of a room, take two sticks. Lap them so one end of each just touches the inside edge of your room or box. Now drive in two nails, and give the boy or man your stick, and tell him that is the dimension, and also bid him bring the stick back again. He will not dare to bring the stick with work that does not match it. If he loses the stick, or throws it away, you have a clear case against him. He can not dispute what you said, or tell you that it was your own blunder. Now, friends, just try cutting sticks. Such sticks are worth very much more than a "sharp stick" *after* somebody has made you something you don't want or can't use.

TRADE NOTES.

AIKIN BROTHERS & KNIGHT'S NEW HIVE; ANOTHER SYSTEM FOR PREVENTING SWARMING.

Some three or four years ago, as our readers will remember, the writer was very much interested in closed-end frames; and his enthusiasm was fired up none the less after visiting Mr. P. H. Elwood, and observing him, on a number of occasions, manipulating these same closed-end frames with ease and dispatch.

Mr. Elwood and Mr. Hetherington, and others who use the frame in the East, in the



AIKIN BROTHERS & KNIGHT'S NEW HIVE.

summer time use only panels to cover up the exposed sides of the brood-nest, the ends of the frames answering as the end of the brood-chamber proper. But it seems that Aikin Bros. & Knight have devised a hive somewhat on the original Quinby plan, to take closed-end frames, but differing in this respect, that the compression feature closes up on the ends of the frames as well as on the sides. How this is accomplished is better described from a brief description taken from Aikin Bros. & Knight's advertising matter.

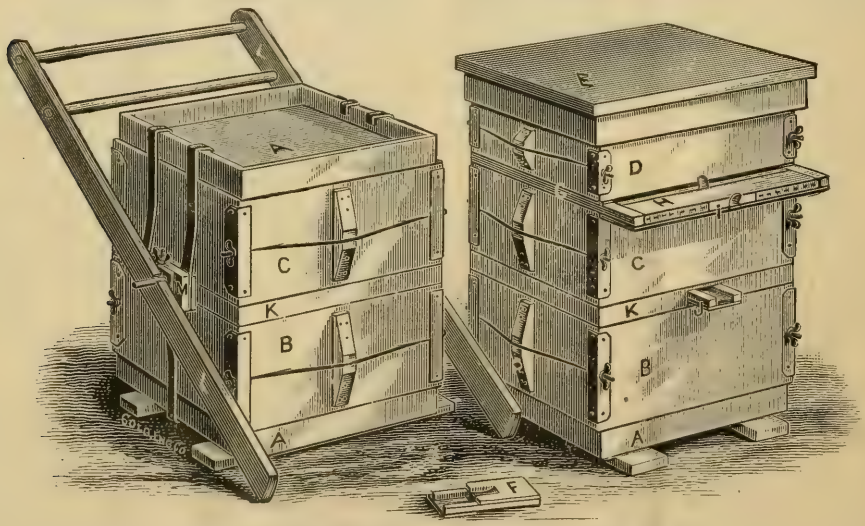
No. 1 is a reversible bottom-board and feeder. Deep side up for winter and feeding. No. 2 is the brood-chamber. It takes a closed-end standing frame 9x17. The bee-spaces are in the bottom-board and honey-board. Both sides and ends are compressed upon the frames by the nuts and rods. When released for manipulation, the frames rest upon the bottom-board rim ends. The chamber is reversible.

The alighting-board (5) is a part of and attached to the honey-board (4), while the entrances (8 and 9) lead respectively under and above the honey-board. The queen-trap (6) covers the brood-chamber entrance. No. 10 is the super, held together by the rods—neither super nor brood-chamber is nailed at the corners—and both sides and ends compressed upon the sections. By compression and spurs, the super sides and separators support the sections perfectly, without T's, slats, followers, or wedges. The 8 and 10 frame hive supers take respectively 2 and 3 separators, and 24 and 32 1⅞-wide sections. They may be full separatored by adding plain wood or tin separators, or by spur separators. For extracting, the super takes 8 1⅞-inch-thick frames in place of the sections. Nos. 12 and 13 are the inner and outer cover.

The two-colony, non-swarming combination brood-chambers (B and C, cut No. 2) each contains a colony of bees. K is the separating-board dividing the colonies. J is the alternator that passes the bees out from the lower hive and returns them to the upper, thus working two colonies in one set of supers. To prevent swarming, both the colonies are reversed *en masse* once a week in the swarming season. The hives are clamped together by the appliance M, elevated by the hoister (L), and revolved as a wheel on its axis. Thus, once a week the queen-cells are upset and the bees alternated.

Loveland, Col. AIKIN BROS. & KNIGHT.

Just how far this means of producing side and end compression may prove to be practical, we are not able to say. In the sample hive we now have at hand (evidently one of the first models), some modification should be made to make the principle work perfectly, as we find there is not sufficient end and side play. With the varying conditions of our weather there should be considerable take-up. The manner of producing the compression will be perfectly evident, we think, from the engravings. The lateral compression is effected by an old device, and one that, we believe, is in use by Henry Alley and some others whose names we do not just now recall. The end compression is effected by a bridge-shaped cleat. As the rod is drawn up, it squeezes on the highest part of the cleat, thus pressing the end-board against



THE HIVES PREPARED FOR NON-SWARMING.

the closed-end frames, one of which is shown at 3, in the first figure.

A novel feature of the super is, that there is absolutely nothing except compression and separators to hold the sections—supporting-slats, etc., being dispensed with. It was Oliver Foster, we believe, who first constructed a super on this plan; but just how far the idea proved to be a success, we are not able to say; but Aikin Bros. & Knight have their separators perforated at regular intervals in such a way as to leave burr edges at the holes, something as you will find on the rough side of a nutmeg-grater. These separators are let down in between the sections, the burr edges coming just opposite to the edges of the uprights of the sections. Pieces of tin, having similar edges, are nailed to the sides of the supers, spaced off so as to come opposite the uprights. Now, when compression is applied to a super filled with sections, these rough edges are supposed to imbed themselves into the edge of the section; and this, together with compression, is designed to hold them up. In actual practice, however, we are of the opinion that this plan would not prove to be an entire success. It may do in Colorado, where the climate is less variable than here; but in our locality, if we apply an *unyielding* compression on a set of sections during moist weather, and dry hot weather comes on, the sections seem to be quite loose. The compression that we find practical in our locality is a yielding compression, or one produced by the springing of the following-board.

The hive proper, as will be seen from the engravings, is an invertible one; and the manner of accomplishing the inversion is effected by the hoister L. This device is quite similar to the one used by J. M. Shuck.

Although there is nothing particular new in the *manner* of reversing, it is applied to accomplish a rather new use—the prevention of swarming. Aikin Bros. depend not entirely upon reversing to destroy cells (we do not believe this is always reliable), but as a *means* to transfer the working force of two colonies of bees from one to the other, and *vice versa*, often enough so as to impoverish for a few days one hive to such an extent that what cells are not destroyed by the reversing will be torn down by the queen, because the condition of prosperity that ruled a few days before has been removed. After the approach of the swarming season, if we understand the method correctly, the working force of the brood-chamber B, by a simple device or alternator, J, Fig. 2, are turned into the brood-chamber C. The alternator is a sort of entrance - block, so constructed that the bees can be turned by a scheme of bee-escapes from one hive to another. The bees, not being able to pass out of the entrance by which they entered, will use the upper entrance between D and H, just above the honey-board G, separating the two lower hives from the super D. When the colony in C is pretty near the point of swarming, the pair is reversed in the manner shown in the left of Fig. 2, hive B being placed uppermost and C below. The alternator, J, is turned the same side upward as before, and the working force is again the upper and now impoverished brood-chamber, where cells have been destroyed, and all thoughts of swarming have been given up. The design is, to keep the working force of two colonies confined to one super or one set of supers, instead of having this same force distributed in two different hives, and on two different supers, with the liability of swarms from either.

So far the *principle* of non-swarming seems to be the same as that of H. P. Langdon, although the *method* by which it is accomplished is entirely different. The Langdon plan, as described on page 406, is, to change the working force from one hive to another on a horizontal plane. The plan above given is to change the working force on a perpendicular plane. Mr. Knight, if we are correct, has used this plan successfully for two years.

Aikin Bros. & Knight say the same plan of non-swarming can be adapted to any hive having loose bottoms by using a honey-board and the "alternator." Indeed, they have sent us one to be used on a Dovetailed hive.

Another peculiarity of the new hive is, that the entrance is at the top. This simplifies the construction of the alternator so that the working force can be very readily turned from one hive to another. Then, besides, it is considered an advantage to have the entrance near the supers, because it is thought that the bees will enter the same more readily. As for wintering, Messrs. Aikin Bros. & Knight think it is better to have top ventilation and the bottom tight.

We notice that we have omitted to say any thing about the queen-trap, as shown at 6, Fig. 1. This is a part of the honey-board, and is designed to trap the queen where swarming is allowed, and it is not deemed best to let the bees or queen escape.

TOBACCO COLUMN.

Please send me a smoker, as I have discontinued the use of tobacco entirely. If I ever use it again I will pay for the smoker.
Dexter, N. Y., March 6. C. G. POTTER.

I think I am entitled to one of your smokers, as I am now a subscriber to GLEANINGS. If I ever use the weed again I will pay you for the smoker. J. H. SIPLES.
Wrights, Miss., April 15.

I have been a subscriber to GLEANINGS since Jan. 1st last, and since that time I have thrown down the cigarette, with the determination of not taking it up again. I therefore claim the smoker as my reward, and hope it will be the means of keeping me from breaking my promise. If I use tobacco again, of course I will pay for the smoker. L. L. NEYLAND.
Berwick, Miss., Mar. 18.

I am a subscriber to GLEANINGS. I noticed your Tobacco Column. My boy has been using tobacco for some time, and I told him about your promising a smoker to those who quit using tobacco or cigarettes. He says he will quit using tobacco if I will get him a smoker. He has two swarms of bees in Dovetailed hives. I think he is entitled to one of your smokers. If he ever uses tobacco again I will promptly pay for the smoker. O. J. WEEKS.
West Webster, N. Y., March 13.

I have been induced, through GLEANINGS, to quit chewing tobacco; and if you wish you may send me a smoker; and if I ever use the weed again I hereby agree to pay you for the smoker. Tobacco is very injurious to me, my nervous system being so susceptible to the narcotic poison contained in the weed that it made me feel like a drunk man. Friends, I hereby give you all warning. Heed my advice, and do not use the filthy weed any more, for it corrupts both the physical and mental energies of man.
ENOCH ANDERSON.
Comanche, Texas, May 10.

ADDITIONAL EDITORIAL.

THOSE OLD BEE-BOOKS.

As promised in our last issue, we begin the first installment of articles reviewing some old (or, rather, ancient) bee-books. The first one of the series is from the pen of our proof-reader, and will be found on page 435. Its perusal, we feel sure, will be found to be interesting and profitable; for, as our proof-reader says, "It is often as profitable to know what those old writers did *not* find out as it is to know what they did; and a piece of negative information is frequently as useful as that which is positive." We hope to have this series continued for some little time; and knowing the writer of them as we do, his intense enthusiasm for the work, we feel sure that he will be able to give us something as readable and spicy as would come from the pen of Mr. Emerson E. Hasty himself—the one who is conducting a series of bee-paper reviews for the *Bee-keepers' Review*.

THE GAMBLING CRAZE AND COUNTERFEIT MONEY.

IN my remarks in our issue for April 1 I omitted to mention counterfeit money. That was brought to mind by a printed circular and pretended newspaper clipping, mailed to us by our good friend C. J. Baldridge, of Kendaia, N. Y. The circular is not very much different from those coming from the venders of green goods for some years back. They pretend to have plates stolen in some manner from the United States Treasury Department. These plates are taken over to Canada, and used to print genuine United States money. The circular is very confidential, of course. We quote just one paragraph from the bogus newspaper clipping:

As the government only is the loser, and is so well able to stand it, the average citizen has no conscientious scruples whatever in taking advantage of the offer of these men, especially as there is no risk or danger in handling these bills, if they use proper precautions and keep their business to themselves. A close mouth, as they tell you, is the secret of success in this nefarious scheme.

The whole thing is very ingeniously gotten up to work upon the feelings of any person who begins to think and talk to the effect that making money by honest day's work is altogether too slow and humdrum, and that very few ever acquire any competence in that way. It appeals to the average young man who thinks he is not getting as much pay as he deserves. This period is very likely to come to most of us somewhere in the teens. If it were only boys in their teens who have such notions, it would not be so bad. I hope every reader of GLEANINGS is by this time well aware that these men never have any counterfeit money at all. If it is exactly the same as good money, and no expert can tell the difference, why should they want to swap $4000 of it for $400 of other money? What is the use of swapping at all? And yet more or less people are falling into their snares, and swapping their money for *dear-bought experience* right along every day. Beware of the tempter.

RECEIVING PERISHABLE GOODS, ETC.

At this season of the year it is almost inevitable that there should be more or less losses in shipping and receiving perishable goods. How shall we make these losses as little as possible? and when they come, how shall we adjust them in a Christianlike way? I will give you my ideas of the matter by one or two illustrations. A few days ago we received a barrel of pineapples, and more than half of them were more or less decayed. Nine out of about 75 were utterly worthless, and went directly to the compost-heap. The order was a personal one, given a runner, and he agreed to send me good sound fruit. I might have sent them back, perhaps; in fact, there are people who do just that thing, or refuse to receive them from the railroad company. In this case they would have been nearly or quite a total loss, for refusing to take them from the railroad company would have finished up the decay that was going on so rapidly. Without any instructions from the shippers, I took the worst of them and had them canned for sauce. It is rather expensive sauce, but it is better than to have them lost. Then I sold the rest of them, some for half price, some for three-fourths price, and the good ones for full price, reporting to the shippers, of course, at once, their condition, and what I proposed to do. They rebated the price of the nine spoiled ones, but said that, as I had made use of the rest of them, they did not think they ought to make any reduction. When I pointed them to the fact that their agent agreed to give me *sound* fruit, they said the agreement was only that sound fruit should be *sent*. I do not think they did right; that is, I think they should have given me some encouragement for trying to save their property from loss; but I am glad I helped to save them, even if I did not make any money by it.

Again, we sent 1000 Wakefield cabbage-plants to a friend in Kansas. When they reached the express office, as he lived some miles away they remained there some over two days before he saw them. Then he refused to take them. I wrote at once to take the plants, and do the best he could with them, and what did not grow we would try to make good. But by this time it was too late. We presume they were thrown away. Now, the express company was an innocent party to this transaction. They carried the plants all the way to Canton, Kansas, in three days or a little less; and yet our friend leaves them on their hands. This matter of refusing to receive goods because they do not happen to reach destination in good order, has, perhaps, made more trouble between express companies and their customers than any other one thing. Somebody, of course, has got to pay the charges. If the express company is made to lose it, you may be sure they will be pretty careful in the future about carrying perishable stuff unless they have charges advanced; and where the goods go over different lines, especially through the South, it may be difficult for them to say just what the charges will be; therefore the only remedy is to be sure to charge enough. We have for years been in the habit of guaranteeing the charges on any goods we ship. Well, here is what our friend in Kansas gives as a reason for refusing the plants:

The roots looked all right, but the tops were all all yellow; and it just looked to me, if I should set them out, I should have all my work for nothing.
Canton, Kan., May 23. HENRY MARTIN.

Of course, I would not expect anybody to go to the trouble of putting out plants in the field unless there were a reasonable prospect that the greater part of them would live. Every gardener should be familiar with the common practice of "heeling in" plants. Take them to a little spot of good mellow earth, right out in the open air. Separate the plants just enough so the soil can be packed around the roots of each individual plant. A thousand cabbage-plants can be nicely heeled in, say in two square yards of ground; and they can stay there, if circumstances require, two or three weeks. When the plants are received in poor order, the proper thing to do is to try to save them in this

way if possible. Two square yards of ground can be easily shaded from the hot sun, with a few old boards, until the plants get rooted. One who does this much to prevent loss, and then notifies the shipper of the result, will, as a rule, get fair treatment. I think that, with the good strong roots there were on those plants, even though the tops were small, almost every plant would have grown with such treatment. The remarkably cold and backward spring has had much to do with the small tops. What is the fair thing to do in a transaction like the above? Well, if our friend will pay the express charges we will send him another lot at half price, or stand half the loss. It seems to me that that would be about fair and right. Had he taken the plants from the office, and heeled them in (I could heel in a thousand plants, and do it nicely in half an hour), then if they didn't grow, I would have cheerfully filled the whole order again. You may ask. "Then why not guarantee satisfaction and safe delivery right along?" The reason we can not do this (in fact, I do not know of any plant-dealer who does it) is, that people have so many different notions as to how plants should look, etc. Another thing, there are quite a good many who seem to think they are excusable for not receiving plants because they stay in the express office several days before they knew they were there. Of course, we send a notice by mail every time we make a shipment of any kind. Sometimes people who live several miles from their postoffice can not get information in this way as soon as desirable. The very best remedy I know of for this state of affairs is to have such a stock of goods or plants that each order can go by return mail or express. The uncertainty of the weather, however, stands in the way of doing this always. Of course, one might have an *immense* stock of every thing—a good deal more than he would be likely to need; and then he must fix his prices so as to cover the losses on every thing when there is a surplus too great to be sold. Every man who is desiring to build up a business ought to be willing to go a little *more* than half way in adjusting matters; and if the other party is *also* willing to go even half way, there certainly ought to be no very great differences, especially among old friends.

KIND WORDS FROM OUR CUSTOMERS.

I received the foundation all in good shape. It was well boxed up, and I am well pleased with my order. WESLEY KENDIG.
Defiance, O., May 6.

I received a quart of the Egyptian onion-sets last fall, and they are indeed a fine early onion. I would not be without them for any thing.
German, O., May 12. J. F. MICHAEL.

The goods I ordered of you came in less than four days after they were shipped. The hive-bodies can hardly be beaten for nice lumber, and the surplus foundation is the nicest I ever saw.
Clinton, Ind., May 4. W. R. CLOVER.

The plants are received, and I will say that they are the finest tomato-plants I have ever seen, and we are, of course, greatly pleased. We are glad you put in the extra transplanted Dwarf Champion plants, though we did not order them. They are just what I should have wanted had I been there to select. DR. G. L. TINKER.
New Philadelphia, O., May 19.

I have had knives in the last 25 years worth upward of $1.50, but never found one before I liked as well as the Diamond knife at 50 cents. As you did better on knives than I expected, please accept my gratitude. Every time I read Home talks and sermons, I feel like writing you an indorsement of their sound, practical good sense. I know our nation is on the eve of some great national trial for want of general diffusion of such staunch business principles. I hope never to be without GLEANINGS while I live and am able to read.
Allegan, Mich. W. H. GARDNER.

I HAVE SOME 10 OR 12

FINE ITALIAN QUEENS,

out of cells saved from swarming colonies, all reared this spring, but mated to black drones. Prices as follows: 30 cts. each; you furnish ready-provisioned cages, or 40 cts. each and I furnish the cage. Safe arrival and satisfaction guaranteed.

L. B. SMITH, Lometa, Lampasas Co., Texas.

TILE ✠ DRAINAGE.

BY W. I. CHAMBERLAIN, A. M., LL. D.,

Formerly Secretary of the Ohio State Board of Agriculture, and late President of the Iowa State Agricultural College. At present Associate Editor of the Ohio Farmer.

This is a valuable companion to our other rural books. It embraces the experience of forty years of one of our foremost practical agriculturists, who has laid with his own hands over 15 miles of tile.

Price 35c; by mail, 40c.

A. I. ROOT, MEDINA, OHIO.

WIRE NETTING,

SHORT ROLLS, ETC.

We submit below, corrected from last issue, a list of the short rolls and remnants of wire netting that we have just received from the factory. We still have a good supply of 2-inch No. 19 netting 4 feet high, which we still offer at these special prices: 1 roll, $3.60; 5 rolls, $17.50; 10 rolls, $34.00. This you notice is 10c a roll higher than our last offer on this size. We have the 3-inch Nos. 19 and 20, 60 and 72 inches wide only, other widths all sold. We have put the price on the following pieces at the same rate as full rolls, except on the 72 inch, on which we offer an extra 10% discount.

Of 2-inch mesh No. 19 wire, we have the following remnants and short rolls at ⅝c per square foot. The figures at the left give the width in inches, and the other figures give the length of each piece in feet. Multiply this by the width in feet, then take two-thirds of the result to find the price of each piece.

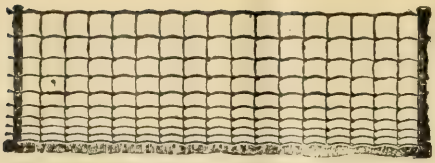
12	117, 123, 130.
24	10, 69, 96 97, 97, 114, 120, 128, 131, 143, 147.
30	45, 50, 60, 62, 64, 70, 90, 91, 101, 107, 123, 137, 140, 144, 146.
36	9, 16, 18, 18, 19, 25, 26, 38, 40, 40, 40, 49, 50, 50, 50, 53, 54, 55, 56, 58, 58, 64, 73, 73, 73, 74, 75, 82, 83, 84, 84, 87, 87, 90, 90, 92, 94, 96, 96, 96, 99, 100, 100, 100, 100, 100, 100, 100, 102, 102, 102, 105, 105, 109, 110, 111, 114, 115, 116, 118, 120, 120, 122, 124, 124, 125, 125, 128, 129, 129, 130, 138, 142, 142, 143, 143, 144, 144, 147, 147.
42	16, 20, 131.
48	11, 12, 20, 20, 25, 29, 32, 35, 38, 40, 48, 55, 55, 60, 61, 64, 67, 68, 75, 75, 82, 8, 38½, 86, 87, 90, 94, 96, 103, 111, 119, 120, 122, 123, 123, 124, 130, 138, 138, 140, 143, 144, 144, 144, 144, 145, 145, 145, 146.
54	72, 88, 88, 143.
60	45, 53, 71, 73, 73, 75, 78, 87, 96, 101, 101, 101, 105, 107, 110, 120, 123, 124, 138, 140, 144, 144, 146, 146.
72	16, 20, 42, 42, 42, 45, 47, 48, 57, 71, 73, 75, 75, 81, 82, 85, 85, 88, 93, 100, 100, 107, 112, 119, 120, 123, 124, 125, 134, 142.

Of 2-inch No. 20 we have the following pieces at three-fifths of a cent per square foot. Arrive at the price in precisely the same way as above, taking three-fifths of the number of feet instead of two-thirds, to get the price in cents.

30	32, 39, 73, 105, 120, 140, 140, 140.
36	12, 20, 22, 36, 38, 39, 56, 57, 66, 68, 79, 81, 86, 88, 100, 100, 100, 110, 119, 120, 122, 126, 128, 128, 132, 134, 136, 138, 140, 141, 144, 145.
42	142, 143.
48	41, 55, 60, 66, 70, 85, 86, 92, 98, 105, 114, 123, 140, 143, 145.
54	145.
60	46, 48, 50, 51, 60, 73, 119, 139, 139.
72	25, 38, 44, 45, 70, 75, 76, 79, 100, 100, 128, 137, 139.

In lots of 5 pieces, any one or assorted kinds, deduct 5%; 10 pieces, 10%; 25 pieces or more, 15%. On the 72-inch netting you may also deduct 10% on single-piece orders; or, in addition to above, on quantity orders. First come, first served. Generally these pieces go off very rapidly, and it may be well to name a second or third choice in case your first may be gone.

A. I. ROOT, MEDINA, O.



Dissolution Probable

The old firm of Contraction & Expansion, long engaged in demolishing wire fences, have had a falling out. Being unable to make any impression on our Coiled Spring Fence, Expansion got HOT and his partner has displayed an un nistakable coolness toward him ever since. Those who use Page fence are not interested.

PAGE WOVEN-WIRE FENCE CO., Adrian, Mich.

☞In responding to this advertisement mention GLEANINGS.

If you wish to

Smile,

Try my fine Italian queens. Either 3 or 5 banded, bred in different yards, 75 cts. each; $4.25 for 6, or $8.00 per doz. Prices to dealers, and by the quantity, on application. Fine breeders, $5.00; always on hand. Prices for those that produce strictly 5-banded bees, on application. Remember, I guarantee safe arrival, and satisfaction in the bounds of reason.

MRS. JENNIE ATCHLEY,
Greenville, Hunt Co., Tex.

Mrs. Atchley:—The bees arrived in good condition and are all right in every respect. The express charges were very reasonable, being only $1.45.
Kaukauna, Wis., May 16. MRS. CHAMBERS.

Mrs. Atchley—Dear Madam:—The 12 queens arrived safe and well last Saturday, a week ahead of time. Only three of the workers succumbed crossing the sandy desert. I think if you do business in this manner you *ought* to be a *rich* woman.
Respectfully, JOHN COLLINS.
Elsinore, Cal., May 13, 1893.

Mrs. Atchley:—I was not expecting you to send me another queen; but if you do that kind of business I can readily see why your trade is constantly increasing. L. B. SMITH, Lometa, Tex.

A NEW BOOK ON Tomato Culture, Plant Growing, AND High Pressure Gardening in General.

Price 35c; By Mail, 40c.

To get your tomatoes started, more or less gardening under glass must be done, as you are probably well aware. Well, when you can manage the tomato under glass, you are ready to manage almost any other vegetable crop; therefore we regard the tomato book as one of the most valuable if not *the* most valuable of any work on raising plants and vegetables that require protection from the frost; and whether the protection is to be in the fall of the year, or the middle of the winter, or in the spring months, you will find the tomato book full of the latest and most modern appliances for giving protection at the smallest expense. Of course, a part of it has already appeared in GLEANINGS; but probably considerably more than half will be found new to our readers.

A. I. ROOT, Medina, O.

Choice Seed of the Japanese Buckwheat.

It does not pay to devote valuable land to the production of any plant simply for the honey it may produce. In providing forage for the bees, other than what they naturally find, choice should be made of those plants that produce honey and yet are a paying crop aside from the honey. One of these plants which generally produces honey, and at a time when other bee-pasturage is usually scarce, is buckwheat. The best variety of this that we are acquainted with is the Japanese, which has been before the public for five or six years. With favorable conditions and good soil this will easily produce 50 bushels per acre, and it matures within a few weeks from the time it is sown. It rarely brings less than 50c a bushel for flouring, and often a much higher price. The price the past year has ranged much higher than usual, being from 70c to $1.00 a bushel.

The time for seeding is at hand, and we are provided with a good stock of choice seed which we offer, while it lasts, at the following prices: 1-lb. 5c; 1 peck, 40c; ½ bush., 70c; 1 bush., $1.20; 2 bush., $2.20; 10 bush., $10.00; bags included. By mail, 8c per pound extra for postage.

A. I. ROOT, MEDINA, OHIO.

Bees and Queens Tested Italian queens, $1.00 each; select tested, $1.50; untested, 60 cts. One 2-frame nucleus, with tested queen, $2.00; with untested queen, $1.50.
9-12d *STEWART & COOPER, Quebeck, Tenn.*

☞In responding to this advertisement mention GLEANINGS.

SEND for one of our special offer queens and a 2-frame nucleus for only $2 00. Circular free. LEININGER BROS., Ft. Jennings, O.

Root's Goods AT ROOT'S PRICES can be had at Des Moines, Iowa. Address Jos. Nysewander.

5=Banded Golden Italians.

Three or five banded queens, each, 75c; 6 for $4.25. Nuclei and full colonies cheap. Pure B. P. Rock and B. Leghorn eggs, $1.00 per 13. Catalogue free.
9-tfdb *Chas. H. Thies, Steeleville, Ill.*

Wanted — To sell bees—full colonies or nuclei. Good stock.
H. Lathrop, Browntown, Wis.

Low Freight Rates and No Delays.

When you are considering where to send for your supplies the coming season, get prices and a list of goods on hand, from one of the following dealers, who handle **ROOT'S GOODS** in carload lots, thus securing them at lowest cost. Most of them, except those far distant, sell goods to users at factory prices, while those far distant add approximately only the carload rate of freight, so that you will **Save Time and Money** by buying your supplies of one of these dealers. We can not give here a list of goods kept, as it varies some at the different places according to the varying needs of each locality. Write to the place nearest you for list with prices, and when you write give a list of the goods you want, and mention this paper.

Quite a full line of goods are sold at factory prices by
F. A. Salisbury, Syracuse, N. Y.
H. G. Acklin, 1024 Mississippi St., St. Paul, Minn.
Jos. Nysewander, Des Moines, Iowa.
A good assortment is also kept for the Far West by
Barteledes & Co., Denver, Col.
For California by
G. G. Wickson & Co., San Francisco and Los Angeles.
For Oregon and Washington by
F. L. Posson & Son, Portland, Oregon.
For the Southeast Atlantic coast by
Baltimore Farm-Implement Co., Baltimore, Md.;
and for the Far South by
J. M. Jenkins, Wetumpka, Ala.

A smaller assortment, consisting chiefly of Dovetailed hives, sections smokers, foundation, and extractors is also kept by the following:
Henry F. Hagen, Rocky Ford, Colo. W. K. Ball, Reno, Nev. W. O. Victor, Wharton, Tex. John Nebel & Son, High Hill, Mo. Thos. G. Newman, Chicago, Ill. Walter S. Pouder, Indianapolis, Ind. Vickery Bros., Evansville Ind.

Our Hives, Comb Fdn., Sections, Smokers, Extractors, Perf. Zinc, etc., are furnished by a multitude of other dealers too numerous to mention. If you want to buy goods made at the Home of the Honey Bees, you can get them as cheap as you can anywhere when you consider quality and workmanship, and your orders will be taken care of promptly. Don't expect to get all the goods we advertise, from any of above dealers, and don't expect to get goods they do not agree to furnish; but find out what they agree to furnish, and at what price, by writing for list to address nearest you.

A. I. Root, Medina, O.

In writing to any of above please mention GLEANINGS.

FOR A KINDS OF KEEPERS SUPPLIES. ADDRESS LEAHY MFG. CO. HIGGINSVILLE MO.

In writing advertisers please mention this paper. 21tfdb

DOVETAILED HIVES, SIMPLICITY HIVES,
SECTIONS, EXTRACTORS, ETC.
FULL LINE OF
BEE-KEEPERS' SUPPLIES.
60-PAGE CATALOGUE. 11tfdb
J. M. JENKINS, WETUMPKA, ALABAMA.
☞In responding to this advertisement mention GLEANINGS.

"Quigley's Golden Italians"

Are big yellow bees bred for honey-gathering and gentleness. They have stood the past severe winter without protection and without loss. Warranted purely mated. Each, $1.00; 6 for $5.00. Safe arrival and satisfaction guaranteed. Circular of queens and a full line of bee-supplies sent free.
9-tfdb E. F. QUIGLEY, UNIONVILLE, MO.
Please mention this paper.

Wholesale and Retail Manufacturer and Dealer in
Bee-Keepers' SUPPLIES.
One-piece Sections a specialty. As good as the Best. Send for catalogue.
W. E. SMITH, Successor to Smith & Smith, Kenton, Hardin Co., Ohio.
Please mention this paper.

Bingham Perfect Smoker Series.

The Doctor, 3½-inch stove, largest smoke and fuel capacity made, $2.00; Conqueror, 3-inch stove, $1.75; Large, $1.50. Postpaid per mail. They all have wide shields, movable bent nozzle, coiled steel wire handle, and inverted Bingham bellows, with Bingham cleated joints. Perfect in principle, perfect in detail, and 14 years the standard in every country.

The Bingham & Hetherington uncapping-knife also belongs in the Perfect series; $1.15.

Original, Unimproved Bingham Bee-Smokers.

Our smaller smokers are as we have always made them. Little Wonder, narrow shield, 1¾-inch stove, 65 cts.; Plain, narrow shield, 2-inch stove, $1.00; Extra, 2-inch stove, wide shield, $1.25. For further description, ¼-dozen rates or more, send card to the original inventor and maker of them.

T. F. BINGHAM, Abronia, Mich.

Mr. T. F. Bingham.—Dear Sir:—I received the smoker in good order. The wire handle and bent tube are a great improvement. The wire handle is a great convenience in removing the cone, entirely prevents burning of the fingers; and the bent tube enables the bee-keeper to use the smoke just where he needs it, without danger of soot, ashes, or fire. It entirely does away with spoiled sections or the dropping of fire. I thought the old Bingham was good, and can not see what the new one leaves to be desired.

Morris Cross Roads, Pa., May 15, 1893. Yours truly, R. W. HIGINBOTHAM.

Wants or Exchange Department.

Notices will be inserted under this head at one-half our usual rates. All advertisements intended for this department must not exceed five lines, and you must say you want your adv't in this department, or we will not be responsible for errors. You can have the notice as many lines as you please; but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices offering articles for sale, can not be inserted under this head. For such our regular rates of 20 cts. a line will be charged, and they will be put with the regular advertisements. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange a good 6-in. Vandervort foundation-mill for cash or offers.
J. NEBEL & SON, High Hill, Mo.

WANTED.—To exchange Italian bees and queens for Root foundation-machine, foot-power printing-press, Barnes' foot-power scroll-saw, or offers.
J. J. HARDY, Lavonia, Ga.

WANTED.—To exchange sixty colonies of Italians and hybrids, in L. hives, in fine condition, for young farm mules, horses, Jersey Red, or Poland China hogs or any thing salable.
J. B. MITCHELL, Hawkinsville, Ga.

WANTED.—Beeswax in exchange for foundation, queens, and bee-keepers' supplies.
F. H. MCFARLAND, St. Albans, Vt.

WANTED.—To exchange Italian bees in Simplicity hives, for fine stock of pigs or poultry.
E. SHIMEL, McCuneville, Ohio.

A B C OF STRAWBERRY + CULTURE.

A ✱ BOOK ✱ FOR ✱ BEGINNERS.

BY T. B. TERRY.

This is Terry's latest and best work, and has received some very high words of praise. Who that keeps bees does not also have a little garden-patch? If you would learn to raise in it that most luscious of all fruit, the strawberry, with the best results, you can not be without this little book. Even if you don't grow strawberries you will be the better for reading it. Pages one-half size of this. Fully illustrated; 144 pages. Price 35c; by mail, 40c.

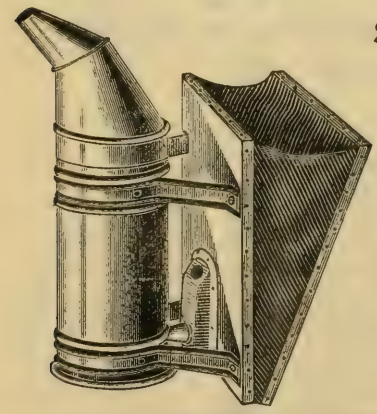
A. I. ROOT, Medina, Ohio.

LITHOGRAPH LABELS

In 12 Colors, at $1.50 per 1000.

The 12 colors are all on each label. They are oblong in shape, measuring 2⅛x2⅝. They are about the nicest labels we ever saw for glass tumblers, pails, and small packages of honey. We will mail a sample, inclosed in our label catalogue, free on application, and will furnish them postpaid at the following prices: 5 cts. for 10; 25 cts. for 100; $1.00 for 500; $1.75 for 1000. A. I. ROOT, Medina, O.

NEW CRANE SMOKER NOW READY.



Smoking Capacity and Strength of Blast Simply Amazing.

The **New Non-Smoke-Sucking Check-Valve,** by which a great blast is secured and the bellows kept clean, and the **double lining of Asbestos and Sheet-steel,** by which the fire-cup and nozzle are kept from becoming uncomfortably hot during usage, are **DISTINCTIVE** and **VALUABLE** features alone possessed by the new implement. It would be impossible to tell of all its unique features, and so we say, try it and fall in love with it.

Price, with 3½-inch fire-cup and curved nozzle, by mail, $2.00; by express, $1.75.

If your nearest dealer in supplies does not keep it, write to the authorized manufacturer,

A. I. ROOT, Medina, Ohio.

N. B.—Don't forget that we are headquarters for all kinds of bee-keepers' supplies. Our new 1893 catalogue of 52 pages now ready for mailing.

SPECIAL NOTICES.

A NEW IMPLEMENT FOR SPRAYING PLANTS, APPLYING INSECTICIDES, ETC.

The little implement shown in the cuts below has been having quite a sale for a few months back. It is not a spraying-pump; but although it is small and cheap it answers the purpose of a more expensive machine, for many purposes. In shape, it is something like a lemon-squeezer; but instead of a lemon you have a ball made of pure soft rubber, with very minute perforations on one side, and a sort of valve on the other. Shut it up, then dip it into a bowl or pail of water, and, while immersed, open the handles. This fills the ball with the liquid. Now hold it over the plant you wish to spray, and it sends a great number of streams so infinitessimally small that

the result is a fine vapor, or dew, covering both the upper and under side of the leaves, as the operator may choose. For sprinkling clothes, or watering plants in the window, of course you use pure water. For applying poisons, however, you use any of the solutions of London purple, Paris green, hellebore,

or pyrethrum, according to the insects to be banished. For convenience you want an extra rubber ball for the poisons. It uses the poisons in such economy that a pint bowl of the liquid may be made to go over a very large surface. The first engraving shows the manner of applying it to a hill of potatoes; the next, to sprinkling clothes; and the third, to sprinkling plants and vines. It is also recommended for bugs and insects on carpets, furs, or clothes. For this purpose a carbolic-acid solution is used. Full directions for using the different kinds of poisons are sent with each sprayer. The regular price of this little implement is 50c. By buying them in quantities, however, we are enabled to sell them for 35c. If sent by mail, the price will be 10c more. Extra bulbs for various liquids will be sent by mail for 20c. each. There is one feature about this rubber-ball sprinkler that gives it an advantage over all of the metal nozzles; and that is, it can not clog nor rust up; for by applying sufficient pressure, the obstruction may be forced through the openings, for these openings are of rubber. We are using one of these rubber balls on the end of a hose, for sprinkling our plant-beds. When the full head of the water is let on, the rubber ball expands to more than double its ordinary size. This, of course, makes the perforations correspodingly larger, and this brings them about the right size for watering beds.

MASON FRUIT-JARS.

Present prospects point to an abundant fruit crop this season. When fruit is plentiful, the canning business flourishes; and it isn't confined to the large canning-factory, but a large proportion of good housewives put up what is needed for home use. Mason fruit-jars are most often used for this purpose, for, unlike tin cans, they can be used over and over again, so long as they are not broken through carelessness or accident. It often happens in fruit-canning time, when fruit is plentiful, that cans are scarce and prices much higher than they are early in the season. We have laid in a stock of first-quality green-glass cans, which we offer, while they last, as follows:

Pint cans, 6 dozen in a box, at $4.00 per box.
Quart cans, 8 dozen in a box, at $5.50 per box.
Two-quart cans, 6 dozen in a box, at $5.50 per box.
All three sizes of cans take the same size of caps, and we can furnish extra caps and rubbers at 35 cts. per dozen; 6 dozen in a box, for $1.80.

TWO AND THREE POUND TIN CANS.

None but the very large canning-factories, having a full outfit of automatic can-making machines, can afford to make their own cans. Those who do a small or moderate amount of canning can buy their cans all put up, ready to fill and solder up, and packed 2 doz. in a case, for a trifle more than the same amount of tin plate in sheets would cost. We have made such terms with the large manufacturers and dealers in these cans, as enable us to offer them at the following prices. Remember, these cans have a small hole, with cap, and must be sealed with solder. Cans made to seal with wax cost a little more.

2-lb. cans, 2 doz. in a case, per case, 95 cts.; 3-lb. cans, 2 doz. in a case, per case, $1.15, f. o. b. here.

F. o. b. Baltimore, Md., in lots of not less than 30 cases, 15c per case less; 10 cases or more, from here, at 5c per case less.

I Challenge

Any one to produce better queens than my **Five-banded Golden Italians.** A good many offer **lower-priced** queens; but, as there is a class of intelligent bee-keepers who want the **best,** I prefer to supply them than to rear queens by the "go-as-you-please" plan, that could be sold cheaper. My aim is to rear the **very best,** regardless of cost.

Just imagine handling bees at any time, regardless of weather or robbers, and using **no smoke,** and never getting stung. That is the way I handle the colony of my best breeding queen; but you ought to see them roll in the honey!

Send for my price list with the **strongest lot of** *testimonials* you ever saw.

One queen, warranted purely mated, May, $1.25; later, $1.00.

Entire Satisfaction Guaranteed.

Reference, A. I. Root. Money-order office, Cable, Ill.

S. F. TREGO,

Swedona, - - - Ill.

Formerly S. F. & I. TREGO. 7-18db

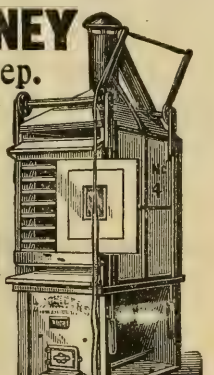
☞In responding to this advertisement mention GLEANINGS.

WANTED— Every reader of GLEANINGS to send for one of my
LADIES' TOILET-CASES.
Well worth $1.00 in any family. Will send sample by mail for 30 cts. in stamps, returnable if not satisfactory. Address *J. C. Frisbee, General Agent, 172 Maple St., Denver, Col.*
Reference, A. I. Root, Medina, O. 10tfdb
Please mention this paper.

HUNT'S FOUNDATION FACTORY.
Send for **Free Samples** of the **Finest Foundation** and **Sections** made. Special prices and advantages to dealers in Foundation. Send for my new illustrated **Free Price List** of every thing needed in the apiary. M. H. HUNT, Bell Branch, Mich.
2tfdb Please mention this paper

MAKE MONEY While You Sleep.

STAHL'S EXCELSIOR FRUIT DRIER



Evaporates Fruit DAY and NIGHT. Catalogue free upon application.
Address
WILLIAM STAHL EVAPORATOR COMP'Y, QUINCY, ILL.
Please mention this paper. 9-24db

BEES QUEENS
SMOKERS, SECTIONS, COMB FOUNDATION
And all Apiarian Supplies cheap. Send for Catalogue.
E. T. Flanagan, Belleville, Ill.

Bee-Hives.
Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue. 23-22db
W. H. PUTNAM, River Falls, Pierce Co., Wis.

Ah, There! Do you know that Miller Bros. are prepared to furnish you with the best Italian queens reared by the best methods? Also all kinds of bee-keepers' supplies. Send for catalogue to MILLER BROS.,
8-9-11d Bluffton, Montgomery Co., Mo.
☞In responding to this advertisement mention GLEANINGS.

CAUTION!
Bee-keepers are cautioned against purchasing drone-traps of one Weaver, of Missouri. He has no authority from me to sell them.
H. ALLEY, Wenham, Mass.

Try Duval's Golden 5-Banded Bees.
That have given such general satisfaction. They are the best honey-gatherers, gentle, and not surpassed for beauty. Queens ready now at $1.25; 6 for $6.00. For full particulars and prices send for circular. C. D. DUVAL, SPENCERVILLE, MD.
Please mention this paper. 7tfdb

DO YOU KNOW
That W. H. Bright is selling bee-hives and fixtures at a bargain? If not write for price list.
6-11db *W. H. BRIGHT, MAZEPPA, MINN.*

Eggs and Plants. Several varieties. Best quality. Any quantity. Finely illustrated catalogue free. Address
GEER BROS., St. Marys, Mo., or H. B. GEER, Nashville, Tenn.
Please mention this paper. 5tfdb

Golden Queens From Texas. My bees can not be surpassed for business, beauty, and gentleness. Safe arrival and satisfaction guaranteed. Untested queens—March, April, and May—$1 each. 50 fine Tested Queens for early orders. $1.50 each. Order early. Send for price list. 5-16db.
J. D. GIVENS, Box 3, Lubson, Tex.

For new price list of *PURE ITALIAN BEES AND QUEENS, AND WHITE AND BROWN FERRETS, ADDRESS N. A. KNAPP, ROCHESTER, LORAIN CO., O.*

Please mention this paper. 4tfdb

Muth's Honey-Extractor.
Square Glass Honey-Jars, Tin Buckets, Bee-hives. Honey-Sections, &c., &c. Perfection Cold-Blast Smokers.
APPLY TO
CHAS. F. MUTH & SON, Cincinnati, O.
Send 10-ct. stamp for "Practical Hints to Bee-keepers."
Please mention this paper.

TAKE NOTICE!
BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH,
14tfdb New London, Wis.

800 L. COMBS.
Large extractor, 10-in. fdn. mill, for sale; also my farm of 120 acres good land; good buildings and sawmill on it, with water power. A fine property.
JAS. NIPE, SPRING PRAIRIE, WIS.

Did You Know That my 44-page Catalogue is now ready? I have the largest stock of Bee-keepers' Supplies in New England, at prices away down. My brand of XX White Thin Foundation, 12 feet to the lb., is the finest in the market (so say my customers). Just send a postal for samples and prices, before you forget it. Address
7tfdb WM. W. CARY, Colrain, Mass.
In writing to advertisers please mention this paper.

If you want **Italian Queens Now,** send to J. N. Colwick, Norse, Texas, who sends bees and queens on receipt of your cash order. Tested, reared '92, $1.25; 6, $7; 12, $13. Untested, $1; 6, $5; 12, $9. Two-frame nuclei, $1.25. Nuclei, $4. *Drones, Bees* and *Supplies* cheap. Safe arrival guaranteed. Send for circular.

Bees and Queens Tested Italian queens, $1.00 each; select tested, $1.50; untested, 60 cts. One 2-frame nucleus, with tested queen, $2.00; with untested queen, $1.50.
STEWART & COOPER,
9-12d *Quebeck, Tenn.*

SEND for one of our special offer queens and a 2-frame nucleus for only $2 00. Circular free. LEININGER BROS., Ft. Jennings, O.

June 25th.

By my system of dequeening at the opening of a harvest, I shall have ***300 tested queens*** of the leather-back strain of Italians for delivery ***about June 25.*** Prices, 75c each; $7.50 per dozen. All young and prolific; none over one year old. ***Book your orders now;*** pay when queens arrive. None will be sent out at these prices before June 20, nor after July 10. First come, first served. 11tfdb
A. F. BROWN, Box 16, New Smyrna,
Formerly of Huntington, Fla. *Fla.*

IF YOU WANT BEES

that will just "roll" in the honey, try Moore's strain of Italians, the result of 14 years' careful breeding. Prices in June: Warranted queens, $1.00 each; 3 for $2.50. Strong 3-frame nucleus, with warranted queen, $3.00. Safe arrival and satisfaction guaranteed. Those who have never dealt with me, I refer to A. I. Root, who has purchased of me over 600 queens. Circular free.
J. P. MOORE,
11-12d *Morgan, Pendleton Co., Ky.*
☞In responding to this advertisement mention GLEANINGS.

READY AGAIN!

My location enables me to rear those nice Golden Queens, by Doolittle's method, as cheaply now as at any time in the North. Untested, 75c; 6 for $4.00; 12, $7.50. Last year's tested, $1.25; select, $1.75; breeder, $2.50. Safe arrival and satisfaction guaranteed.
J. B. CASE, Port Orange, Vol. Co., Fla. 5tfdb
☞In responding to this advertisement mention GLEANINGS.

I TELL you what, Jones, **Levering Bros.** sell the best goods and at the lowest price of any one I've struck yet. The largest and best equipped

Bee-Hive Factory

in the West. The Dovetailed Hive and New Hoffman self-spacing frame a specialty. Every thing used by practical bee-keepers at wholesale and retail. Send for their free Illustrated Price List, and save money. Supply Dealers, send for their Wholesale List. Address
LEVERING BROS.,
3-14db **Wiota, Cass Co., Iowa.**
Please mention this paper.

BEE-HIVES AND SUPPLIES.
Send for catalogue free. Address **SAMUEL JONES,** Highland Park College, Des Moines, Iowa. 1-19db

SELLING OUT! Chaff Hives, etc., very cheap. F. H. & E. H. DEWEY, 55 Mechanic St., Westfield, Mass. 8-12db

Deduct 3 Cts. per Pound

From our retail prices of foundation, given in our 1893 price list.
M. H. HUNT, - Bell Branch, - Mich.

For Sale at a Bargain.

The entire stock of bees and paraphernalia, all of superior quality and of the most modern and approved kind, of the late Albert Edwards. Enquire of Mrs. Albert Edwards, Box 18, Skaneateles, N. Y.
COOK, NOTTINGHAM & PIERCE.

5-Banded Golden Italians.

Three or five banded queens, each, 75c; 6 for $4.25. Nuclei and full colonies cheap. Pure B. P. Rock and B. Leghorn eggs, $1.00 per 13. Catalogue free.
9-tfdb *Chas. H. Thies, Steeleville, Ill.*

Root's Goods AT ROOT'S PRICES can be had at Des Moines, Iowa. Address Jos. Nysewander.

Choice Seed of the

Japanese Buckwheat.

It does not pay to devote valuable land to the production of any plant simply for the honey it may produce. In providing forage for the bees, other than what they naturally find, choice should be made of those plants that produce honey and yet are a paying crop aside from the honey. One of these plants which generally produces honey, and at a time when other bee-pasturage is usually scarce, is buckwheat. The best variety of this that we are acquainted with is the Japanese, which has been before the public for five or six years. With favorable conditions and good soil this will easily produce 50 bushels per acre, and it matures within a few weeks from the time it is sown. It rarely brings less than 50c a bushel for flouring, and often a much higher price. The price the past year has ranged much higher than usual, being from 70c to $1.00 a bushel.

The time for seeding is at hand, and we are provided with a good stock of choice seed which we offer, while it lasts, at the following prices: 1-lb. 5c; 1 peck, 40c; ½ bush., 70c; 1 bush., $1.20; 2 bush., $2.20; 10 bush., $10.00; bags included. By mail, 8c per pound extra for postage.
A. I. ROOT, MEDINA, OHIO.

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CONVENTION NOTICE.

The bee-keepers of Texas will meet with the Horticultural Society at Rockport, Texas, June 20—22. A steamer will be at our service, and a grand time is anticipated.

JENNIE ATCHLEY.

DON'T MONKEY with CROSS BEES.

Our Golden Queens are the Best.

Untested, 70c; 3 for $2.00; tested, $1.25. Bee-keepers' supplies at lowest figures, and best goods. Send for price list.

John Nebel & Son, High Hill, Mo.

☞In responding to this advertisement mention GLEANINGS.

For Sale. Italian bees in A. I. Root's 10-frame Simplicity hive, at $5.00 per colony.

E. R. GIBBS, Norwalk, Ohio.

Wanted. *To exchange or sell at once, 15 Colonies Italian Bees,* a lot of Bee supplies, and 3 pens thoroughbred poultry. This is a good chance for any one starting in the bee-business. Will take $75 for the lot.

J. C. PROVINS, Masontown, Pa.

Black and Hybrid Queens For Sale.

For the benefit of friends who have black or hybrid queens which they wish to dispose of, we will insert notices free of charge, as below. We do this because there is hardly value enough in these queens to pay for buying them up and keeping them in stock; and yet it is oftentimes quite an accommodation to those who can not afford higher-priced ones.

Twenty black and hybrid queens for sale. Blacks, 25c each, or 5 for $1.00. Hybrids, 30c each, or 4 for $1.00.

ALBERT HINES, Box 532. Independence, Iowa.

Wants or Exchange Department.

Notices will be inserted under this head at one-half our usual rates. All advertisements intended for this department must not exceed five lines, and you must SAY you want your adv't in this department, or we will not be responsible for errors. You can have the notice as many lines as you please; but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices offering articles for sale, can not be inserted under this head. For such our regular rates of 20 cts. a line will be charged, and they will be put with the regular advertisements. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange Italian bees in Simplicity hives, for fine stock of pigs or poultry.
E. SHIMEL, McCuneville, Ohio.

WANTED.—To exchange apiarian supplies for Italian queen. J. B. MURRAY, Ada, Ohio.

WANTED.—From July 1 to 10, 50 young laying queens, Italian or hybrid, also 50 nuclei, two frames, brood, 13½ or 17⅝ long, by 9⅛ deep, top-bar projecting ¾ inch.
FRANK MCNAY, Mauston, Wis.

WANTED.—A competent person to take charge of bees, queen-rearing, and garden. Apply, stating age, experience, references, wages, inclosing photo. GEO. A. LATIMER, Norfolk, Neb.

WANTED.—Information as to the whereabouts of a climate with beneficial effects to throat and lung ailments, also to obtain employment in said climate. Have had some experience in apiculture and carpentry; am handy with almost all sorts of tools. Can give good reference.
A GLEANINGS Subscriber, Gehm, Putnam Co., Mo.

WANTED.—To exchange honey-extractor, solar wax-extractor (good as new), and six colonies of Italian bees, for incubator.
G. C. HUGHES, Pea Ridge, Ark. Box 15.

WANTED.—To exchange for bees or bicycle, or almost any thing else, a horizontal sorghum-mill, practically as good as new, cost about $400. Write for full particulars. This is a bargain.
M. J. WILSEY, Washington, Wash. Co., Kan.

WANTED.—To exchange one 5x8 Favorite photo outfit (new) for a good bicycle or incubator.
G. J. STURM, Mt. Erie, Wayne Co., Ill.

WANTED.—An active young man of good morals, and experience in bee culture, to work in apiary. State experience and wages wanted.
W. D. WRIGHT, Altamont, N. Y.

Root's Goods for the West.
Address Jos. Nysewander, Des Moines, Ia.

Bingham Perfect Smokers.

CHEAPEST AND BEST ON EARTH.
Patented 1878, 1882, and 1892.

The Doctor, 3½-inch stove, largest smoke and fuel capacity made, $2.00; Conqueror, 3-inch stove, $1.75; Large, $1.50. Postpaid per mail. They all have wide shields, movable bent nozzle, coiled steel wire handle, and inverted Bingham bellows, with Bingham cleated joints. Perfect in principle, perfect in detail, and 14 years the standard in every country.

The Bingham & Hetherington uncapping-knife also belongs in the Perfect series; $1.15.

Original, Unimproved Bingham Bee-Smokers.

Our smaller smokers are as we have always made them. Little Wonder, narrow shield, 1¾-inch stove, 65 cts.; Plain, narrow shield, 2-inch stove, $1.00; Extra, 2-inch stove, wide shield, $1.25.

They are a great convenience in handling the cone and smoke. We can recommend it to all bee-keepers as being just the thing.—QUEIN & FYKE, Ettawanda, Cal.

The best to be had.—C. J. DONALDSON, Lapeer, Mich.

As perfect as need be.—H. M. SEELY, Harford, Pa.

It is just what I wanted.—J. C. KEITHLEY, Shacklefall, Mo.

They are a desirable attachment.—WALTER S. POUDER, Indianapolis, Ind.

I would almost as lief do without the smoke as without the attachments.—HENRY F. HAGEN, Rocky Ford, Col.

To sell again, or rates or circular, send card to **T. F. BINGHAM, Abronia, Mich.**

HONEY COLUMN.

CITY MARKETS.

MINNEAPOLIS.—*Honey.*—There is quite a demand this week for honey, especially white comb honey, 1-lb. sections. Stock on hand in this market is very light. Receipts during the past ten days have not been enough to supply the trade. Fancy white comb honey, 18@20; No. 1 white, 17; fancy amber, 16; No. 1 amber, 14; fancy dark, 12; No. 1 dark, 10. Strained honey, Cal., 60-lb. kegs, 9. Dark honey is very slow sale. *Beeswax*, almost unsalable.
May 27. J. A. SHEA & CO.,
116 First Avenue North, Minneapolis, Minn.

BUFFALO.—*Honey.*—Very little indeed can be said about honey this time of the year. We have heard nothing as to the ensuing crop, nor do we know much as to the prospects. We presume, however, that it should be a good season for honey. We are in the field to handle very liberal quantities as usual, and as soon as the time comes you can consider us as good a market as any in the United States for handling large quantities. A few straggling sales, 8@10; fancy white, 15@16. Extracted, half-pound bottles, $1.00 per dozen. BATTERSON & CO.,
June 7. Buffalo, N. Y.

CINCINNATI.—*Honey.*—We note a number of arrivals of new extracted honey from the Southern States which brings 5@7 on arrival. Demand is fair. No choice comb honey being on our market, prices are nominal at 12@15 for best. Arrivals of beeswax are good, and demand is fair at 22@25 on arrival for good to choice yellow.
CHAS. F. MUTH & SON,
June 8. Cincinnati, O.

KANSAS CITY.—*Honey.*—All the old crop of honey about cleaned up; no new in the market. Will not have any quotations to make until new crop comes in the market. CLEMONS-MASON COM. CO.,
June 8. Kansas City, Mo.

CHICAGO.—*Honey.*—The honey market is nominal; very little merchantable comb honey in sight. The demand for extracted is small, we think owing to the fact that consumers are awaiting developments with regard to the quantity that the new crop may give us. *Beeswax*, steady at 23@25.
R. A. BURNETT & CO.,
June 7. 161 So. Water St., Chicago, Ill.

DETROIT.—*Honey.*—Market about bare; a little new crop would sell quickly at 14@15. Extracted 7@8. *Beeswax*, more plentiful and lower, 23@24.
June 8. M. H. HUNT,
Bell Branch, Mich.

PORTLAND.—*Honey.*—We have just received the first consignment of new crop of California comb, 1-lb. sections. Selling at 17. Consignments solicited. LEVY, SPIEGL & CO.,
May 25. Portland, Ore.

KANSAS CITY.—*Honey.*—All of the old honey crop is closed out. Nothing on the market. Prospects for a large yield good. HAMBLIN & BEARSS,
June 8. Kansas City, Mo.

ST. LOUIS.—*Honey.*—Market unchanged on comb. Arrivals more free in extracted. We quote in barrels 5½@6; cases, 6½@7½. Prime beeswax, 24½c.
June 8. D. G. TUTT GROCER CO.,
St. Louis, Mo.

SAN FRANCISCO.—*Honey.*—Our crop this year is of extraordinarily fine quality, being mostly white and very light amber. We quote to-day: White, 6¾@6½; light amber, 6. *Beeswax*, 20@23.
SCHACHT, LEMCKE & STEINER,
June 3. San Francisco, Cal.

CLEVELAND.—*Honey.*—Demand for honey good; white seems to be firmer, and good clear water-white, would bring 15½@16, 1-lb. sections. *Beeswax*, 30.
WILLIAMS BROS.,
June 8. 80 & 82 Broadway, Cleveland, O.

BOSTON.—*Honey.*—No change in honey market as yet. BLAKE & RIPLEY,
June 8. Boston, Mass.

NEW YORK.—*Honey.*—New crop extracted is arriving freely. Market is quiet, and the demand limited. We quote fancy grades from 7@8c; common to fair, 60@70c per gallon, as to color, flavor, and body. *Beeswax*, 26@27.
HILDRETH BROS. & SEGELKEN,
June 10. 28 & 30 West Broadway, N. Y.

BUFFALO, N. Y. Unsurpassed Honey Market. BATTERSON & CO. Responsible, Reliable, Commission Merchants. 18tfdb **and Prompt.**

Muth's Honey

In packages of ¼, ½, 1, and 5 lbs.,
25c. per lb.
If sent by mail, add 17c for every lb.
C. F. Muth & Son,
976-978 Centr. Ave.,
CINCINNATI, OHIO.

Caramels.

BUGGIES at ½ Price
CARTS & HARNESS
$90 Top Buggy..$37
$95 Phaeton.....$54
4 Pass. Top Surrey.$47
$50 Road Wagon $25
$16 Road Cart..$8.25
Buggy Harness$3.85
$10 Buggy " $4.75
$30 Team " $12.50
Morgan Saddle$1.65
We Cut the PRICES and outsell ALL competitors. Buy of factory and save Middleman's profit. Catalogue Free.
U. S. BUGGY & CART CO.
55 S. Lawrence St., Cincinnati, O.
7-12db Please mention GLEANINGS.

GRAY CARNIOLANS GOLDEN ITALIANS

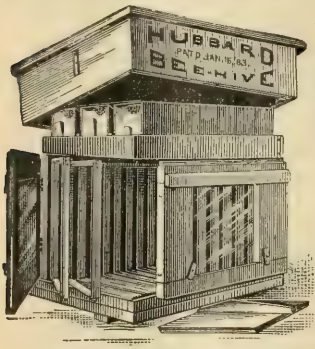
WE are headquarters in the United States for **Gray Carniolans.** A full description of this *wonderful* and *hardy* race of bees is given in our price list for 1893. Our **Golden Italians** are as good as the best. Each race is bred for business, in a separate apiary near no other bees. Get our prices before ordering, as we can save you money. Descriptive price list free.
F. A. Lockhart & Co., Lake George, New York.

PATENT WIRED COMB FOUNDATION
Has No Sag in Brood-frames.
Thin Flat-Bottom Foundation
Has no Fishbone in the Surplus Honey.
Being the cleanest, it is usually worked the quickest of any foundation made.
J. VAN DEUSEN & SONS,
Sole Manufacturers,
Sprout Brook, Montgomery Co., N. Y.

20 Years' Gleanings.

A complete set of GLEANINGS, Vol. 1 to Vol. 20, inclusive, bound in leather backs and corners, cloth sides. In perfect order, as good as new. Will sell the set for $16.00. Speak quick. Don't want to exchange. Have some valuable foreign bee-books, old, but in perfect order. Write
J. P. McELRATH, Asbury, Warren Co., New Jersey.

HUBBARD BEE HIVE AND SECTION PRESS.



If you want to handle bees **easy** by sitting down to it, here is the hive. Frames fixed and variable distance combined. No wrenching or prying or scraping of combs together. Many thousands in use, giving excellent satisfaction.

Live Agents make Splendid Profits.

Large Circular of 20 pages free.

This **SECTION PRESS** (Pat'd) is sold at **$2.50** by the leading supply dealers Ask them for it or send to me. A boy can put together 800 to 1000 sections an hour and have them **true.** Bend section around, put in press, give a little push —'tis done Will last a life-time and is bound to please you.

Send for my Circular about Hive, Press, Foundation Fastener, Sections, Foundation, Italian Queens, Extractors, Veils, Honey Crates and Cases, &c. &c. It will interest you. Or send **15 cents** for Practical Book for Beginners—**"First Principles in Bee Culture."** 11th thousand just issued.

G. K. HUBBARD, 277 Harrison St., Fort Wayne, Ind.

In writing to advertisers please mention this paper. 8tfdb

Crossman's Got 'em

Those Beautiful Golden Queens.

Reared from the best five-banded stock. **Unexcelled** for **Business, Beauty,** and **Gentleness.** Satisfaction guaranteed. Warranted queens after June 1, 90c each; $9.00 per doz. Tested, $1.50 each. Select tested, $2 50. Safe arrival insured. Send for circular.

W. P. CROSSMAN,
Ballinger, Runnels Co., Texas.

5-16db Please mention this paper.

SAY!

Did you know that Green sold *TESTED QUEENS* OF HIS CHOICE STRAIN OF YELLOW HUSTLERS

For Only $1.00?

It's so. Before July 1st, $1.50. Mismated queens, 35c. Have your orders booked now. Full colonies and nuclei at low prices. 12tfdb

J. A. Green, Ottawa, Illinois.

The Northwest Home of the Honey Bee.

COLE & LOWERS,

DEALERS IN

A. I. ROOT'S BEE SUPPLIES.

BREEDERS OF ITALIAN QUEENS AND BEES.

Write for Price List.

LATONA, KING CO., WASHINGTON.

Please mention this paper. 12 13-14db

GOLDEN ITALIANS.

My bees are large and great honey-gatherers. Untested queens, 80 cts.; 3 for $2.00. Warranted queens, $1.00; 3 for $2.50. Tested queens, $2.00. Select tested, $2.50. Satisfaction guaranteed, or money refunded. **C. M. HICKS, Hicksville, Wash Co., Md.**

Please mention this paper. 8-10-12d

HUNT'S FOUNDATION FACTORY.

Send for **Free Samples** of the **Finest Foundation** and **Sections** made. Special prices and advantages to dealers in Foundation. Send for my new illustrated **Free Price List** of every thing needed in the apiary **M. H. HUNT, Bell Branch, Mich.**

2tfdb Please mention this paper.

Charge

what you will for Japanese Buckwheat, I will *sell* you choice clean seed for $1.00 per bushel.

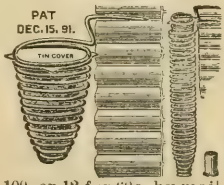
F. M. CRANE, River Sioux, Harrison Co., Iowa.

California Bee-Keepers!

Can obtain ROOT'S GOODS, also California-made Supplies, from

WM. STYAN, SAN MATEO, CAL.

CONTROL YOUR SWARMS.



N. D. West's Spiral Wire Queen-Cell Protectors will do it, and you can RE-QUEEN your apiary during the swarming season. Pronounced the best by such men as Capt. J. E. Hetherington, Cherry Valley, N. Y.; P. H. Elwood, Starkville, N. Y., and others. Cell-Protectors, $3.00 per 100, or 12 for 60c, by mail. Cages, $5.00 per 100, or 12 for $1.00, by mail. Samples of both, with circular explaining, 25 cts. The cages are used for hatching queens in any hive, and are the best Bee-Escape in use. Address 5-8db

N. D. WEST, Middleburgh, Schoharie Co., N. Y.

Please mention this paper

Central Bee=Hive Factory

And Bee-keepers' Supply-house of Illinois. Write for Catalogue for 1893. Address

F. N. JOHNSON, P. O. Box 137,
8-13bd **Knoxville, Knox Co., Illinois.**

WANTED — Your address

on a postal card, to receive the *Am. Apiculturist* 9-tfdb *FREE THREE MONTHS.*

Address *H. ALLEY, Wenham, Mass.*

esponding to this advertisement mention GLEANINGS.

Leininger Brothers WILL SELL Italian Queens

And Nuclei Cheap. Send for Prices.

Fort Jennings, Ohio. 7tfdb

SUPPLIES.

Large illustrated catalogue free; or send 10c in stamps for ***THE BUSY BEE,*** a book telling how to manage them.

WALTER S. POUDER, Indianapolis, Ind.
4-12db **175 E. Walnut Street.**

"You Push the Slide; Nature Does the Rest."

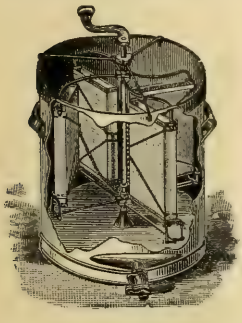
The first *perfect* and *practical non-swarming* plan that has ever been brought to completion is *found at last*. Nothing like it ever done. I worked the plan on *100 colonies* last year (1892), and I do not make any statements at random in my circular, as each point has been fully tested. Tells you all about it. No hunting or caging queens, cutting cells, moving hives, or even opening the brood-chambers at all during the honey season, etc., etc., *and more honey with no swarming*. Get into line and "keep up with the procession," or you'll get left. The device will be put on the market within the reach of all; or, if your dealer does not supply them yet, they may be ordered of me by express or freight at the following prices, complete: 75 cts. each; $5.00 per 10; $40.00 per 100. By mail, 35 cts. extra. As one device *works two hives*, at ten rates the cost is only 25 cts. per hive. Be sure to send for circular, as this plan is almost too good to believe its being true.

H. P. LANGDON, East Constable, N. Y.

10-14db Please mention this paper.

Stanley Automatic Reversing

HONEY-EXTRACTOR.



We still have in stock eight or nine 2 and 4 frame Stanley extractors, bought of Mr. Newcomb when we leased the right to make these machines. To work them off quickly, and give us a chance to put out machines of our own make, we offer these machines as long as they last, at one-third off old prices. We will sell the two-frame machines as they are for $8.00; the 4-frame for $12.00. They are crated ready for shipment, with crank direct on the center-shaft. We will attach our new bevel gear, as shown on page 14 of our catalogue, for $3.00 each extra.

A. I. ROOT, Medina, Ohio.

WANTED.—To sell about 200 colonies of bees—guarantee safe arrival to Colorado, or similar distance. E. SANDFORD, Nokomis, Ill.

GOLDEN CARNIOLANS

Absolutely a Faultless Strain of Bees.

One queen	$1 00	Leather-colored Italians
Three "	2 75	same prices as Golden
Six "	5 50	Carniolans. Satisfaction
Twelve "	10 00	guaranteed. 10tfdb

HENRY ALLEY, Wenham, Mass.

☞In responding to this advertisement mention GLEANINGS

Eastern Supply House.

We furnish everything used in the apiary, and at bottom prices. Illustrated circular free.

I. J. STRINGHAM, 105 Park Place, N. Y.

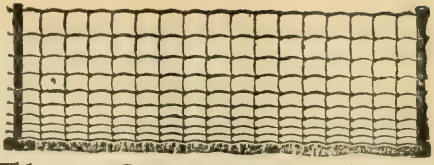
21-20db Please mention this paper.

Cash for Beeswax!

Will pay 21c per lb. cash, or 24c in trade for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 28c per lb., or 30c for *best selected wax*.

Unless you put your name *on the box*, and notify us by mail of amount sent, I can not hold myself responsible for mistakes. It will not pay as a general thing to send wax by *express*.

A. I. ROOT, Medina, Ohio.



The Coming Fence

Is the title of another Hustler "poem." Here is one verse:

"Other fences there will be,
But no one can fail to see
That 'gainst this they stand no show to win the day.
They lack the essential thing,
The self-regulating spring
Which defeats expansion and contraction in a scientific way."

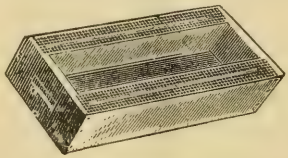
Send for a copy.

PAGE WOVEN-WIRE FENCE CO., Adrian, Mich.

☞In responding to this advertisement mention GLEANINGS.

A. E. MANUM'S LEATHER-COLORED ITALIAN QUEENS

Are superior to all others for business, is the verdict of those who have them. PRICES: one untested, $1; six, $5.50; twelve, $10.00. Tested, $1.50 each. Selected for breeding, $2.50 each. One yearling, tested, *in June only*, $1.00; six, $5.50; twelve, $10.00.



THE MANUM FEEDER.

Models of Manum's new "Rapid" feeder with, full printed directions how to make, and what, when, and how to feed for best results, $1.00 by mail, postage paid. Descriptive catalogue mailed free on application. 5-12db

A. E. MANUM, Bristol, Vt.

If you wish to

Smile,

Try my fine Italian queens. Either 3 or 5 banded, bred in different yards, 75 cts. each; $4.25 for 6, or $8.00 per doz. Prices to dealers, and by the quantity, on application. Fine breeders, $5.00; always on hand. Prices for those that produce strictly 5-banded bees, on application. Remember, I guarantee safe arrival, and satisfaction in the bounds of reason.

MRS. JENNIE ATCHLEY,
Greenville, Hunt Co., Tex.

Mrs. Atchley:—The bees arrived in good condition and are all right in every respect. The express charges were very reasonable, being only $1.45.
Kaukauna, Wis., May 16. MRS. CHAMBERS.

Mrs. Atchley—Dear Madam:—The 12 queens arrived safe and well last Saturday, a week ahead of time. Only three of the workers succumbed crossing the sandy desert. I think if you do business in this manner you *ought* to be a *rich* woman.
Respectfully, JOHN COLLINS.
Elsinore, Cal., May 13, 1893.

Mrs. Atchley:—I was not expecting you to send me another queen; but if you do that kind of business I can readily see why your trade is constantly increasing. L. B. SMITH, Lometa, Tex.

☞In responding to this advertisement mention GLEANINGS.

Experiments.

Michigan is to have an experimental apiary managed under the auspices of the State Experiment Station. The Hon. R. L. Taylor, of Lapeer, is to be the apiarist. Probably no more competent man could have been secured. He is experienced, careful, methodical, and conscientious. He will conduct a department in the REVIEW, headed "Work in the Michigan Experimental Apiary," in which will be given monthly reports regarding the experiments being conducted. Work has already been commenced Subscribe for the REVIEW at once, and keep track of the experiments from the beginning. The REVIEW to the balance of the year, and the 50-ct. book, "Advanced Bee Culture," for only 75 cts. Stamps taken. If not acquainted with the REVIEW, send 10 cts. for three late but different issues.

W. Z. HUTCHINSON, Flint, Mich.

Free! 200-Page Bee-Book!

TO EVERY NEW YEARLY SUBSCRIBER TO

The Weekly American Bee Journal

32 pages, $1.00 a year. Send for FREE Sample Copy with full description of Book.

Address, **GEORGE W. YORK & CO., 56 Fifth Ave., CHICAGO, ILL.**

TO NEW SUBSCRIBERS: THE JOURNAL ALONE SENT FOR 3 MONTHS FOR 20 CENTS.

Great Reduction.

Sections at greatly reduced prices. Hives, Shipping - cases, etc., at Bed-Rock Prices. Write for free Illustrated Catalogue and Price List.

G. B. Lewis Co.,
Watertown, = = = Wis.

1tfdb Please mention this paper

Great Reduction in Prices.

We now sell our premium No. 1 one-piece sections at $2.50 per M; No. 2 at $1.50. *A liberal discount* will be made on larger orders. Dealers would do well to get our figures on sections and wood separators before buying elsewhere.

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GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
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STRAY STRAWS

FROM DR. C. C. MILLER.

SMOKERS seem to be the burning question now.

THAT COMB-LEVELER of B. Taylor. I've tried it, and it's splendid—a real acquisition.

ANOTHER FACTOR in the sealed-cover business that ought to be reported is the amount of lower ventilation.

THE BEST THING in the bee-corner at the World's Fair was to see how glad each bee-man was to help the other.

RAMBLE No. 85 is capital—gets right down to solid bee-talk, and puts in more than the usual number of healthy laughs.

HONEY-COMB, in the Bible, always means what we call comb honey. Isn't it used the same way nowadays in England?

LOOK OUT, Bro. Root, what you say about patent-medicine ad's, or you'll offend some of the religious papers. Such ads *pay*.

WOODCHOPPER, you let my queens alone. If "some smart young rambler" comes fooling around, better tell him my shot-gun is loaded.

LAYING WORKERS, according to Abbe Martin, in *L'Apiculteur*, can be produced only by a partial operation of the laws that produce a queen; that is, they must be specially fed while in the larval state.

FRIEND ROOT, that talk on page 439 is first-class—A1. all but one thing. Never wait to be "in a fit frame of mind to apologize." Blurt out an apology the minute you see you're wrong, and let the "frame" take care of itself.

INTRODUCING QUEENS. A plan given in *Revue* is, to thoroughly dust with flour all the bees after shaking them into a box, then dump them down in front of the hive, and, as they enter, add the queen and her companions, also floured.

MRS. ATCHLEY says birds almost never destroy queens flying from hives standing alone, neither do they when the hives stand together; but in the latter case the queens enter the wrong hive on return from their wedding-flight.

I'VE COME DOWN off the compression theory, but I'll get back long enough for a dab at Woodchopper (p. 433). Queen goes off in the corner because she can't find cells enough elsewhere; and the will of the workers, not the queen, has decided in advance that there should be drone-cells ready for her there. See?

OVERSTOCKING is a word that is not translated in the French bee-journals; but the English word is transferred bodily into their language. To balance the account, can we not adopt their word *souche*, which means the mother colony, or the one from which a swarm has issued?

LITTLE BLACK ANTS, about $\frac{3}{16}$ of an inch long, says E. S. Lovesy, in *A. B. J.*, are the bane of bee-keeping in Utah. They are everywhere by the million, destroying eight colonies for him last season, some of them strong colonies, besides weakening others. I think I'll not move to Utah.

JOHN MCARTHUR feels sure he has known workers to change worker eggs to drone eggs. Worker brood has been given to a queenless colony having no drones. Has any one else made any such observation, or is he mistaken? Very positive proof would be needed to establish such a belief.

IN FRANCE, as well as here, the spring has been unusual. *L'Apiculteur* reports that no such spring has been known for 13 years. But, unlike here, the spring has been remarkably favorable there. Natural swarms issued in April, one as early as the 5th, and honey has been stored from fruit-bloom.

ABBE MARTIN says, in *Apiculteur*, that no worker can be changed to a laying worker after it is sealed up in its cell—it is made a laying worker by special feeding during its larval existence. If this be true, it agrees with my view that laying workers do not appear till all worker brood is hatched. But I'm not sure of my ground.

"HOLDING TOO LONG to one set of ideas" (p. 420) is hardly the way to put it. Never ride exclusively a single hobby, neither longer nor shorter, unless you want to kill both horse and rider. If A. I. Root at the start had kept a change of hobbies, his principal hobby would still be in vigorous health, to the great advantage of bee-keeping.

LANGDON'S ARRANGEMENT, whether it succeeds in all cases or not, is an effort in the right direction. Prevention of increase, prevention of swarming, automatic hiving, none of them are so desirable as a plan of working straight along for comb honey without any desire to swarm. Whatever the "proof of the pudding" on eating, the outside of the bag has certainly a promising look.

TRANSFERRING, according to H. F. Coleman, in *A. B. J.*, should be done at beginning of clover-bloom rather than in fruit-bloom, there being less honey then, more bees to straighten up matters, and the loss of brood at this later period is not so serious, as it will be somewhat late for the clover crop. "Transfer in fruit bloom" is time-honored advice, but there seems sense in Mr. C.'s position.

A NEW THING under the sun is reported in the French *Revue*. M. Gubler found wax stored in cells; and samples submitted to the learned Dr. de Planta were pronounced by him, upon careful analysis, to be genuine beeswax, bearing clear evidence of having been stored in the cells by the bees. An unusually abundant harvest is supposed to have something to do with the case.

THE SMOKER QUESTION doesn't greatly interest me. For years I've been insisting that what we wanted was something like the Clark, that would let the whole force of the bellows go without loss through the nozzle, but have a valve to keep smoke out of the bellows. Theoretically, the Crane smoker fills the bill, and in actual practice it is all my "fancy painted it." If it works as well a year from now, we don't need a better smoker than the Crane.

"I FULLY BELIEVE that the brightest journal, the one filled with the freshest and most practical ideas, the one with a 'touch of nature' upon its pages, can be made amid the hum of bees and buzz-saws." Those are the closing words of an editorial in *Review*. As the *Review* is one of the journals that might plume itself on its freedom from the supply-trade, the words quoted show that Hutchinson is either a fool or the essence of fairness. I take the latter view.

HONEY FROM BASSWOOD.

DOOLITTLE TELLS WHEN IT WILL AND WILL NOT PAY TO MOVE BEES TO BASSWOOD FIELDS; HOW WE MAY KNOW IN ADVANCE WHETHER BASSWOODS WILL YIELD HONEY.

A correspondent wishes me to answer the following questions through GLEANINGS:

1. I am thinking of moving my bees this summer a few miles to where there is an abundance of basswood, hoping to secure a greater yield of honey than I at present receive, as I have no basswood near me. What do you think of the idea? 2. Are not the blossom - buds formed on basswood-trees a few weeks previous to the time of their opening, so that I can know by this whether there is a prospect for honey from that source in time to make preparations for moving? 3. Are there any seasons when basswood blooms in profusion, when there is no yield from it?

In answering the first question I would say that the plan is a good one, and I can see nothing against it, except the expense. I believe basswood to be the greatest honey-producer in the world, as reports of 10, 15, 20, and even a higher number of pounds have been reported from this source during a series of days, while, if I mistake not, no such yields have been reported for any length of time from any other honey-producing plant or tree, although there may have been reports of 20 lbs. from other sources for a single day. If the questioner can move his bees to the basswood, and return them at an expense of $1.00 per colony, it will be seen that 10 lbs. of honey from each colony will pay the cost, counting honey at a reasonable figure, if they should get that surplus. By going back over my account with the bees for nearly twenty years, I find that my yield from this source has been not far from 50 lbs. per colony on an average. Now, if we call 50 lbs. what we can expect one year with another from basswood, and if it costs 10 lbs. of that for moving the bees to the basswood, we shall have 40 lbs. left for profit; or, calling the honey at 10 cents per pound, as above, it would give us $4 per colony as clear money on each colony over what we should have had if we had not moved them. So if 100 colonies are moved, we have $400 free of all expense for our undertaking.

In answering the second question, I will say that the fruit-buds and leaflets of all trees with which I am familiar are formed in June and July of the preceding year; so the result of the next season's honey-yield, so far as buds and flowers are concerned, is assured nearly or quite a year previous to their expanding. After being formed they remain dormant till the warmth of the next spring brings this dormant life into growth. As soon as the buds unfold, the latter part of May, then we can see and know whether to make preparations for moving the bees or not. By examining closely, as soon as the buds unfold so that we can see the miniature leaves, we can find the bunch of basswood buds at the base of each tiny leaf, curled up and looking very much like a very small fuzzy caterpillar. With each week this bunch of buds grows, till at the end of about seven weeks from the time the trees put on their green in the spring, they open their flowers, filled with nectar to invite the bees to a sumptuous feast. Of course, a cool season will retard the time of their blossoming a little, and a hot season advance it; but the above is the rule. Thus the practiced eye can tell nearly two months in advance, as to the promise of the yield of basswood honey. Providence giving favorable weather while it is in bloom.

In replying to the third question, I will say that I never knew a season when the basswood did not furnish some honey. The shortest yield that I ever knew gave a three-days' yield, in which honey was so plentiful that the bees could not prepare room fast enough to store it, with a gradual tapering off of two days more, making five days in all. The longest gave a yield of 25 days, with 3 of them so cold that the bees could work only a little in the middle of the day. The state of the atmosphere has much to do with the secretion of honey in the basswood flowers. The most unfavorable weather is a cold, rainy, cloudy spell, with the wind in the northwest. If basswood came at a time of year when we were liable to have much such weather, there might be such a thing as an entire failure of honey from it. But as a rule we have very little such weather at this time of the year. The condition most favorable to a large yield is when the weather is very warm and the air filled with electricity. At times when showers pass all around, with sharp lightning and heavy thunder, the honey will almost drop from the blossoms; and even when showers are present nearly every day, I have known bees to do well. At these times of greatest yield I have seen honey in the blossoms after they had fallen off on the ground, so that it sparkled in the morning sunshine. Then this nectar is nearly the consistency of honey, and not sweetened water, as in clover, teasel, etc., which makes basswood doubly valuable over most other honey-secreting plants and trees. One bee-load of nectar from the basswood, in a dry warm time, is equal to three from white clover, or five from the teasel and some of the other honey-producing flowers. I have taken two or three stems of blossoms, when the yield was great, and jarred them over the palm of the hand when I could turn two or three drops of nice honey out of my hand. All of these facts point toward a success in moving to a basswood forest, above what it would be to try to do the same where other blossoms were to be the source of honey-yield. G. M. DOOLITTLE.

Borodino, N. Y.

[In the above, friend Doolittle has surely presented something of value to every bee-keeper in the region of basswoods. We have just been looking over our trees, and find the little blossoms which Mr. D. speaks of. They are not nearly so plentiful as a year ago; but it will be remembered that, at that time, we had an unusually heavy flow from basswoods. It is seldom if ever that two heavy basswood seasons come in succession; and this is true of all sorts of fruit-trees. A tree that yields heavily one season is not so liable to do as well the next season. Nature seems to have exhausted herself in the effort. We think that, if our readers will take pains to read the above article through carefully, it will save them perhaps a good deal of unnecessary expense in bringing bees to a basswood region when there will be no honey worth going to get. But, as a general thing, if basswoods grow in profusion in any one locality it will pay to place a certain number of colonies within their reach.]

ARE HYBRID AND BLACK BEES WORTH IMPROVING?

WHAT J. A. GREEN THINKS.

I was greatly surprised to see, in the answers to Query 867, how many there were who said, in effect as well as in words, "Let well enough alone." I should have little fault to find with those who take the drift of the inquiry to be whether or not the bees have degenerated, or are likely to degenerate or "run out," through close in-breeding. Although in-and-in breeding often produces bad effects with other animals, I do not think it probable that bees under ordinary circumstances will breed so closely within a certain strain that deterioration will result. Nature has guarded against this by providing that the mating of the queen shall take place in the air, at a distance from the hive. I think it is an entirely unwarranted assumption, that the bees in question have requeened themselves for years from their own progeny. All of the queens might have been reared by the bees themselves, but the drones with which they mated may have come from several miles away. It is for this reason that I should not apprehend any degeneracy from in-and-in breeding. Still, it is often the case with bees, as with other animals, that an infusion of new blood gives renewed vigor. This is especially the case when different varieties are crossed.

What I especially deplore in these answers is the advice to "let well enough alone." Where would the world be if men had been satisfied to work on this principle? There is scarcely an animal or plant that man makes use of for his pleasure or profit that has not been greatly improved by breeding or selection. Within the memory of the present generation, careful selection, and crossing and breeding, have greatly improved our domestic animals, and added millions of dollars to our national wealth.

The long, lean, slab-sided, razor-backed hog of a few years ago was considered good enough by its owner; but the modern hog is a far more valuable and profitable animal. See how the cow has been improved as a producer of butter and milk as well as of beef. Witness how the standard of horses has been raised, both for speed and draft. The same improvement may be noticed all along the line of our domestic animals, to say nothing of fruits, grains, and vegetables. Are we to conclude that any mongrel breed of bees is "good enough"?

It would seem, from the language of the querist, that he has paid little or no attention to the breeding of his bees. It is a fair inference that he has had no bees of improved strains with which to compare them. How, then, is he to know that his bees are as good, comparatively speaking, as he believes they are? He says they are healthy, prolific, and good workers. This might truthfully be said of almost any lot of bees; but a trial of them in comparison with the best-bred strains might show that, as compared with these, they were very inferior.

"Every crow thinks its own crowling whitest;" and the owner of live stock of any kind, even if it is only a yellow dog, is very apt to consider it about as good as there is. The men who are wedded to such ideas as that must expect to be left behind in the march of progress.

The bee-keeper has the advantage over the breeder of stock of almost any other kind, in that he may make a comparative test for himself of the different varieties, at only a trifling cost. If the breeder of horses or cattle should wish to make a complete change in the breed of his stock he must go to a great deal of expense in disposing of every animal and getting others in their place. If he adopts the usual plan of "grading up" he must still go to considerable expense for pure-bred sires.

The bee-keeper can make a complete change in his stock at comparatively small expense, and have every bee of the new variety within less than three months. With a money outlay that is really insignificant he can have all of his bees reared from superior stock, and having nearly all the good qualities of the improved race. For two or three dollars, or less, he may test improved varieties for himself alongside of his old ones. In this way he may gain knowledge from practical experience, which is always the best of teachers.

The best way for the inquirer to do would be to procure from some reliable breeder one of his best breeding queens, and rear queens from this. It is almost certain that this stock would be an improvement on what he has, so he would probably be safe in rearing from them enough queens to supply his whole apiary. Unless he is certain that his breeding stock is desirable in every way, it might be safer for him to buy two or three queens of each of several breeders, and, after a thorough test, get a good breeding queen of the stock that suited him best.

If he can afford the money better than the time required to rear the queens, let him get from reliable breeders several dozen queens, which, at the proper season, may be procured at very low rates. Then let him rear all queens from selected colonies, or, if he prefers to let the bees rear their own, keep drone-traps on all undesirable colonies, which will somewhat reduce the chances of impure mating. To keep an apiary pure when there are other races within bee-flight, requires a constant struggle; but the bees of almost any apiary may be very much improved by a very little trouble in the way of selection and rejection.

As to race, there is really but little question. The Italians have fairly won the right to be considered the best variety of bees cultivated. Although a few good bee-keepers think very highly of the Carniolans, all the other races that have been introduced, some of them with much blowing of trumpets and highly imaginative recommendations, have proven undesirable, and have been discarded. In this connection, be it observed that the so-called "Golden Carniolans" are not Carniolans at all.

The beginner is specially warned against spending his money for any novelties in bees unless he wishes to test them in comparison with what are recognized as the best, and can afford to spend money for that purpose.

The Punic-bee fiasco should be a sufficient

warning to go slow in this direction. It might be a great misfortune to bee-keepers at large to have an inferior race of bees scattered broadcast over the country, especially if they were put into the hands of those who know nothing of better races, or who would become disgusted with the unsuccessful experiment of improvement, and make no effort to repair its evil effects. In selecting that which all recognize as good, there is but little opportunity to go astray. To replace or cross the bees in question with Italians could hardly fail to improve them, and the advantages would be great as compared with the cost. J. A. GREEN.

Ottawa, Ill.

—*American Bee Journal.*

THE LANGDON NON-SWARMER.

QUESTIONS ANSWERED.

There are a few questions about my non-swarmer which I have been requested to answer through GLEANINGS. One is in regard to there being a loss of unsealed brood in the closed hive when the field force is all turned into the other hive. As my experiments have been made in my house apiary I can not prove that there will not be, except by what I am able to judge by comparison.

I was surprised at the large number of bees that remained in the closed hive, even to the end of the week; and to the best of my judgment there will be no loss unless it is where the nights are cooler than we have here at that time of the year.

But for argument's sake, let it be admitted that there is a loss of unsealed brood. Is it a damage? I say no, decidedly not; for why would it be any worse than caging or removing the queen for two weeks during the fore part of the honey season, as scores of our best apiarists do? They claim it to be an advantage, and prove it, too, by their honey crops, as I did before bringing the non-swarmer to perfection. The bees that hatch from eggs laid at that time do not become field bees until basswood is over, so the object in view is to get the swarm into the best possible condition for the opening of the season, and make the most of the force then flying and about to hatch—the condition of the brood during the next month being a secondary consideration so far as dollars and cents and the welfare of the colony are concerned. There is no danger of suffocation, as the exit-hole in the end of the hive may be made as large as 1⅝ inches if thought best.

As for queens being killed, I did not meet with the loss of more than is often the case at other times from unknown causes. One writer said in GLEANINGS, some time ago, that the best and quickest way to introduce a queen was to take her on a comb of bees and brood from her own hive, and put the whole into the center of the brood-nest of the unqueened hive at the time the other queen was taken away, and the behavior of the bees run in by the non-swarmer seems to be the same as though they were at home.

The non-swarmer can be used on the Heddon hive, or any other closed-end frame or portico hive, by tacking on a small rim the width of the hive-front to the rear face of the non-swarmer, so as to set it off from the hive a bee-space. In this way no exit-hole is needed in the hive-end.

The ages of the queens must be kept track of, and the old ones replaced before they begin to fail from old age, as it is self-evident that the bees can not attend to it when the non-swarmer is in place. This will give the advantage to the man who attends to his bees; for one who does not, can not use the non-swarmer. H. P. LANGDON.

East Constable, N. Y., June 2.

DESCRIPTION OF MRS. JENNIE ATCHLEY'S APIARY.

A GLIMPSE OF THAT AND OF SOME FRIENDS IN TEXAS.

This apiary is situated just inside of the corporate limits of the city of Greenville, just about one mile north of the court-house. It is in a natural grove of post-oaks and elms, and has a gradual incline to the south. It contains about 400 full colonies of bees, all in 8 and 10 frame Simplicity hives, except a few hives in front of the people, which are the crosswise Simplicity, bought of a neighbor. The larger part of the apiary is cut off from view by the crowd of people, and extends some distance in the rear, and, in fact, now almost covers a ten-acre grove. The scattering hives in front are our cell-building hives, while just about thirty yards north is our residence, with our fine breeders in the front yard, consisting of 30 hives not shown in the photo.

That end of the apiary where you see the ladder, and the man holding the swarming-basket, is where we keep our select tested queens; and the day before the photo was taken, a swarm of bees was taken down from the elm-tree where the ladder stands. At the other end of the apiary, away back in the distance, is where we keep our nuclei and small hives, with queens ready to go at a moment's notice; and when I get time I will tell you in GLEANINGS how I keep and preserve queens ready for immediate orders. Under the tall twin post-oaks near the center is a large work-bench where we do all kinds of wood work, nailing hives, painting, preparing nucleus hives for shipment, etc.

The lady standing at the foot of the tree where the ladder is, is Mrs. Ellen Atchley, of Arlington, Tex. She has her little girl-baby in her arms. The boy up in the tree is Walter Puthuff, one of the helpers in the yard. The first person to the left of the tree is Charley Atchley, 14 years old, and he is the one who works at that bench, and makes all the nucleus hives and shipping-boxes. The next person I will call your attention to is master Napoleon N. Atchley, nine years old, who, with one of A. I. Root's Daisy wheelbarrows (by the way, the handiest tool in the apiary), does nearly all the freighting, as he calls it, in this large apiary. It would surprise you to tell you that this little boy can carry 200 lbs. on his wheelbarrow. You may catch a glimpse of him sitting on a bee-hive, with his feet crossed. Next we will skip three persons, and my husband stands just behind the lady sitting down with her baby in front of her. He is in bad health, and can not do hard work, but helps to keep up the correspondence, and helps about the house. The next one to him, and standing between the two hives with "Bee-hive" written on them, is Willie Atchley, who does all the cell-grafting, and raises nearly all the queens in the yards, and is said to be the best-posted boy of his age (16) on bee culture in the South, and the best queen-raiser in the world, of his age. He has been raised in the queen-yards, and never has had the chance to attend school ten days in his life, but is scholar enough to attend to most kinds of business nevertheless.

Next we will skip up to the twin trees, and there, just to the left, stands your humble ser-

MRS. JENNIE ATCHLEY'S APIARY, GREENVILLE, TEXAS.

vant, Mrs. Jennie Atchley, with a white apron on, and holding to the hand of the baby-girl Rosa. Just behind little Rosa stands Amanda. She is now 19 years old, and runs her own queen-yard; and last, but not least, comes Miss Leah, six years old. She stands just in front of sister Amanda, and just behind little Rosa. She has now ten hives in the front yard that she runs her own way; and it may take you by surprise to tell you that she raises queens, grafts cells, cages queens, or does any other light work in the yards, and can go and cage any certain queen in the yard if you will only tell her the number of the hive she is in.

This completes the family, except little Ives, who is two years old, and stands between me and little Rosa, but is hid from view. He is already learning bees faster than any of the others, simply because there are more to teach him, and he is quick to "catch on." We also have out-yards scattered in the country.

Greenville, Tex. MRS. JENNIE ATCHLEY.

[The following we clip from the Greenville *Headlight*, of May 20, 1893:]

Mrs. Jennie Atchley's apiary of this city is doing the largest bee business now that we have ever known done in the South. They have, during this spring's business, shipped out over a carload of bees. They have gone to all parts of the United States, and several shipments to foreign countries. Recently an order each from Honolulu, in Hawaii, and Ireland, were filled. Besides these shipments they have sent over 2000 Italian queen-bees by mail. Their apiary in the northern part of the city is worth visiting.

[We believe that Mrs. Atchley is not only the largest queen-breeder in the South, but, in fact, in the whole world. She has what those in the North have not—a beautiful climate—in fact, a climate wherein she can rear queens every month in the year. Of course, this means no winter problem and danger of losing nuclei as in the North. It seems that Mrs. Atchley and family do almost the entire work alone, and this reduces expenses. We regret to say that the half-tone hardly does justice to the figures. They would hardly be distinguished; and as we are not able to see Mrs. Atchley's features, we hereby request her to send us a recent photograph. We should also like a picture of that 16-year-old boy who is said to be "the best-posted on bee culture of any one in the South, of his age, and the best queen-raiser in the world." We are sure our readers would like to have a good look at both.]

RAMBLE '86.

SHEEP; HOW THE SAGES BLOSSOM; TEMPERANCE IN CALIFORNIA, ETC.

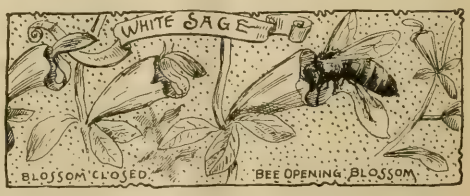
In all parts of California the fertile valleys and even the mountain-sides have rendered good pasturage for sheep, and herds have roamed at will over the waste places. Along with the planting of the vine the early missionaries also introduced sheep and cattle as an aid to the conversion of the natives. While the indolent Mexican ruled the country, and the ranches were few and far between, large herds of sheep had an unlimited pasturage; but with the irrigation era the valleys are becoming dotted with thriving villages, and the sheep-owner is hedged about with difficulties unknown in former times, and which are even greater than the trials of the bee-keeper, for stringent laws have been passed in this State against their crossing occupied lands, and often damages to a considerable amount are claimed and collected. The farmers are generally opposed to these marauding bands, and the bee-keeper also regards them as an unmitigated evil and a damage to his occupation. A band of five or ten thousand sheep means so many thousand mouths to bite off the growing herbage, and four times as many thousand feet to trample down what has escaped the mouths.

Alfilaree is the first plant in February and March that gives a honey-producing flower; and though the blossom is a tiny one, bees get a good start upon it, but the foliage of alfilaree is good pasturage for any kind of stock, and they thrive upon it; but a band of sheep will soon clean up a large area of it, and the bee-keeper dislikes to see the destruction go on. Besides destroying this early plant, other honey-plants with a low-growing habit are either eaten or tramped. When the sheep finds a scant supply of food from the low-growing plants, even the sages are browsed upon and injured. Though disliked by bee-keepers and others, aside from this the life of the shepherd is not an easy or a pleasant one. A good share of the shepherds are Frenchmen. In the wilder portions of the State they follow their herds, and sleep where night overtakes them, with their trained dogs with them. In the more settled portion of the country the herd is rounded up at night at headquarters, which generally consists of a small tent. With 5000 sheep around it, the air smells decidedly sheepy; add to this the terrible odors from several dead sheep, and the pleasures of shepherd life can be appreciated.

The monotonous life of a shepherd often leads to insanity. If sheep were endowed with a few qualities that would bring out the idea of self-defense, this monotony would be broken into often, and danger from this cause would be averted. Bee-keepers are not troubled in that manner. There is only one instance on record of a bachelor bee-keeper becoming insane. This man allowed a fair-eyed damsel to beam delightfully on him until the poor fellow imagined himself the sole owner and possessor of the damsel. Just then another fellow came along and married his beloved. Instead of taking it as an interposition of Providence, or looking around for a better damsel, he just went crazy over it. The aggressive nature of the bee keeps the bachelor bee-keeper in a sort of perpetual warfare, and he has enough of it without adding a domestic war also.

The bee-keeper does not care so much for the destruction of the smaller flowering plants; but when the sages come in for destruction, it touches his pocket, and there is a sort of mild warfare.

The first sage to come into blossom is that variously called black sage, button sage, and



bolled sage. Upon these buttons or bolls the little flower-tube appears, and is much like the flower-tube in the red-clover blossom. The button develops flowers from the outer edge of the button for several weeks. The bush is about five feet in height, bearing a large number of button-stalks, with several buttons to the stalk, the largest button being a little over an inch in diameter, and diminishing in size toward the tip of the stalk. A little drop of nectar can be squeezed from the little tube,

just as we can squeeze it from the tube of red clover. When the flowering season is past, the buttons turn to nearly a black hue, and cling to the bush until the next season.

The habit and appearance of the white sage is entirely different. The woody portion and the leaves is nearly white, which gives it its name. The flowering stalk makes a rapid growth of several feet in one season, and the plant throws up a dozen or more of these stalks, all the way from three to eight feet in height. Each stalk is loaded with racemes of buds, which continue to produce flowers for several weeks. The illustrations of these plants in the A B C are very good, in a general way; but the description of the white sage is not complete without giving the way in which the bee sips the nectar from the white-sage blossom. The opening in the corolla is nearly large enough for the bee to thrust its head into; but, as if jealous of its treasured sweets, the flower is provided with a long projecting lip that curls up, not unlike a letter S, and in such a manner as to close effectually the entrance. When I first saw a white sage blossom it was with much interest I speculated upon how the bee gained access to the nectar. Soon a busy worker darted in among the flowers, and, alighting upon the projecting portion of the S-shaped lip, it bent down under the weight of the bee, opening the door to its treasure-house, which the bee soon relieved of its contents. Upon the departure of the bee, the door immediately closed again, to be opened and reopened by the successive foragers. If the rainfall has been light, the white sage will not bloom so profusely; and, furthermore, the lip of the flower is stunted, and so short that the bee can not find standing-room upon it; and, after vainly striving to gain an entrance, it reluctantly seeks another flower, with well-developed flowers. The lip readily yields to the bee, and the load is secured as quickly from this flower as from the simple tube of the button sage. It is when the sages are in blossom, in May and June, that the bee-keeper has to hustle in order to keep his dish right side up.

MIDNIGHT RUN.

If there is a complaint from manufacturers in the East that their customers are dilatory in placing their orders, it is doubly so here; and cans, cases, sections, and foundation are demanded with an intensity that increases with a favorable yield. The mail, the telephone, and the telegraph are all successively used, and finally some disappointment experienced in not receiving things promptly. The home manufacturer of foundation is busy, and several in need of foundation gather around and make a midnight run. The Rambler happened in to one of these locals, and every thing moved along finely until about eleven o'clock, when one of the boys disappeared and soon returned with mysterious bottles. The town was prohibition in sentiment, with not a saloon, and the bearer of the bottles said that he was a prohibitionist; but for all that the bottle had a suspicious look to the Rambler, and he is sure that it contained "mal cerveza" (bad beer), as the Spaniards say. The Rambler clung closer to his big water-jug, and admonished the boys, as they tipped their bottles bottom upward toward the ceiling, that, if they presisted in doing so, their honey-dishes would also be found in the same position, for "mal cerveza" always turns things the wrong way.

The obtaining of a beverage of a strong nature in a prohibition town admonishes all believers in temperance principles that it is but a small step of progress to forbid the sale of beverages in one town while the surrounding towns continue its sale. The thing to do is to extend the area to the county, to the State, and to the nation. Hurrah for the temperance cause, and down with "buen vino" (good wine) and mal cerveza, and their attendant chain of evils! shouts the RAMBLER.

BEE-KEEPERS' EXHIBIT AT THE WORLD'S FAIR.

MORE ABOUT IT.

When you go to the World's Fair, inquire for the Agricultural Building; and, having found that, go to the southeast corner of the gallery, and you will find the bee-keepers' exhibit along the east wall, running some distance from the southeast corner. I can not tell what you will see when you go there, for things may, and undoubtedly will be, very much changed by that time. But I can tell you something about it as I saw it last, May 19.

The exposition authorities have put up a number of cases—fourteen, I think—to be filled with displays of honey. Three of these cases are shorter than the others, the lay of the land requiring it; but the general appearance is of fourteen cases just alike. The eleven larger ones, if I am not mistaken, are 25 ft. long, 4 ft. 4 in. wide, and 7 ft. high. That, you understand, is the inside measure of the glass case. At the bottom is a platform 2½ ft. high, which, with the molding at the top, makes the total height of the structure about 12 ft.

These cases are allotted to the different States, nearly $200 being paid for each case. New York has the distinction of having two cases, one of the larger and one of the smaller. And that's not the only thing New York has done to make the other States green with envy. It has secured a place where a number of colonies of bees will be placed along the outside wall, holes being cut through the wall to make passage for the bees, thus making a real live

apiary. Still further, it is the only State, so far, that has a nice lot of white section honey. You know that last season was not the best for getting nice honey, and last year's honey is not generally expected to be improved by standing till the last of May. So it is not to be wondered at that the honey in general, what little there is of it, is not such as would always take a first premium at a county fair.

I'll tell you what those New York fellows did. Last fall they secured about 16,000 pounds of best section honey. It was kept through the winter in a room heated by steam to about 50 degrees. It was brought to Chicago in any thing but nice cases, and a lot of empty cases were brought along, brand new, beautifully white, and packed in close boxes so as to keep them clean. The best half of the sections were sorted out for exhibition, the rest being disposed of, and these white cases with white sections piled straight up in the large showcase. In the niches left between the cases made by rounding the corners are put pound bottles of extracted honey of different colors. Although only part of one case was yet filled, there was enough of it to make it a beautiful show, and one that a bee-keeper would gaze long upon after being told that it had been kept over winter.

O. L. Hershiser is in charge of the New York exhibit, assisted by a Michigan bee-keeper, C. H. Hoyt. I couldn't find out just what amount New York had appropriated, but I think $6000 or more will be spent on their exhibit.

Iowa's case contains a small display, all white honey, the idea probably being, as in most cases, to put in a fresh and larger exhibit of this year's crop as soon as it can be obtained. The exhibit was put in place by the veteran Kretchmer, a much younger-looking man than I expected to see. A notable feature in his case is a full-sized "Alternating" hive, made entirely of beeswax, 50 pounds of wax being used in its construction. Friend Kretcmer has also a display of hives and implements on tables.

E. Whitcomb, president of the Nebraska State Association, is in charge of the Nebraska case. This exhibit excels in fullness of varieties. It is largely of extracted, each kind being labeled, the different colors being so mixed as to make a very pretty show. Besides the honey in the case are articles manufactured from wax, and a fine collection of pressed honey-plants prepared by Prof. C. E. Bessy. The Nebraska appropriation is $1000.

C. A. Hatch and Frank Wilcox have put the Wisconsin case in shape, with only $300 appropriation from the State. Pound sections are made into semicircular arches, with a diameter of perhaps 4 ft. "J. J. Ochsner, Pra. du Sac, Wis." appears in large letters of comb honey, nicely designed; but the unfinished cells in a few of the letters show that last season was not a booming one in Wisconsin.

A. G. Hill has boarded up against the wall some 12 or 14 ft. high, with two elevations projecting something like counters in front, with four or five different kinds of articles well spread over the wall and counters.

Of A. I. Root's very full display I will not attempt a description, as one will probably be given in detail elsewhere.

Ontario's exhibit was on the ground, but not yet to be seen in place. Its case was filled with shelves arranged terrace fashion, but the shelves were yet empty. I saw some of the empty glass bottles or jars that are to be filled and placed on the shelves, and I suspect there will be a very fine display. For these glasses alone about $300 has been expended, the largest costing about $3.00 each. At some distance from the Ontario case is a sort of office and storeroom, 9x15, in which matters may be stored and the exhibitor can, if he chooses, entertain visitors. It will be entirely covered outside, I think, by a display of all kinds of implements. Some 3000 to 4000 pounds of honey have been brought from the Canadian side; and, if I understand the matter rightly, the government has not made a specific appropriation, but undertakes to foot the bills necessary to make a good show. I shall be much surprised if the show is not a fine one.

To me the most interesting part of the Ontario exhibit was Allen Pringle. Tall, spare, earnest-looking, and genial withal, you'll like to meet him and have a talk with him; and he always knows what he's talking about.

The Ohio case contained a sort of framework of gas-pipe having strung on it a lot of things that looked something like iron shoemaker's lasts, and a fat man dressed in blouse and overalls. The intention is to take out the man with blouse and overalls and put in some shelves of glass to be filled with honey. When you get near enough to see the man's face, you will have no difficulty in recognizing it as that of the jolly two-times president of the North American, Dr. Mason.

I can't tell you a thing as to what is to be in the other cases, as they were entirely empty. At the eleventh hour Illinois has an appropriation of $3500, but I don't know what the display will be. Perhaps nothing till the bees furnish something of this year's crop.

Marengo, Ill. C. C. MILLER.

THOSE OLD BEE-BOOKS.

ANOTHER PEEP AT THE "GOOD OLD TIMES."

The next book that claims our attention is the oldest one in the lot, and is entitled "Butler's Feminine Monarchie." It was printed in Oxford, England, in 1609—two years before the English Bible was published under the sanction of James I., and two years after Jamestown was settled. The pages are 4x6 in size, and 236 of them. The book is nicely bound in leather, and is so well preserved that it seems not to be over a year old; and yet when the binder laid it down he would have had to wait 166 years for the American Revolutionary War to begin. How one wishes it could talk, and tell us where it has been all these years! The other book, noticed in our last, was printed in 1657; and in going back to 1609 we notice a rapid decline in regularity of spelling, beauty of letters, and knowledge of the "fubiect" treated. The letter j is not used, but "long s" is. The author, "CHAS: BVTLER Magd.," says, in the title-page, that his book is "A treatise concerning bees, and the dve ordering of them; wherein the truth, found out by experience and observation, discovereth the idle and fond conceipts, which many haue written anent this subiect."

The above is useful as showing that the soul of even Mr. "BVTLER" was grieved by the ignorance of those who went before him. How fortunate for Adam's standing in society that he did not write a bee-book, providing bee culture has improved from the first! A specimen of the spelling of those days is here given for the benefit of Jake Smith:

Onlie, hir. haue, lád (land), vnles, hovve, vnluckely, etc. The letter w is made of two v's, the letter v often standing for u, and u for v. The letter n is often omitted after a vowel, over which is placed a mark; thus, "cócealing" for "concealing." To a printer, the pages of this book present a remarkable appearance in that every line is spaced very closely; that is, the words are all very near together. This method is impossible in common print, for we divide

words at the end of a line according to syllables; but syllables are not divided. In this old work, words of all kinds were divided about as it happened. An auxiliary verb is often joined to the principal; thus, shalbe, donot, cannot, etc. The first word on each page is printed in a separate line at the foot of the preceding page. Numerous references are printed in the margin. The forms of verbs used are such as "one findeth in ye Holie Bible."

If these old books contained any thing of real value to the modern bee-keeper I would copy it and dwell less on their appearance; but the awful darkness in which those writers lived renders their works to-day of no practical benefit aside from literary curiosities. Through the mind of Butler, however, some gleams of light break forth. In giving the names of ancient writers on bees he mentions Aristomachus, Philiscus, Pliny, Aristotle, Columella, Varro; and "infinite others." But in speaking of their various works the writer says: "But in al their writings they seeme vnto me to say little out of experience, and to rely more vpon the relation of hearsay than anie certaine knowledge of their own." But when their experience tallies with his, he has frequently inserted their words, mostly in Latin, "for authority and ornament." He well observes further: "But the later writers, imitating the ancient where they thought good, choosing some of their directions and refusing others, doe, for the most part, vnluckely light upon the worse." The practical value of these old writings is happily expressed thus: "These and the like, when a scholar hath throughly read, he thinketh himself throughly instructed in these mysteries; but when he cometh abroad to put his skil in practice, every silie woman is ready to deride his learned ignorance."

"Learned ignorance!" that's good. Does any of it come from our schools and colleges?

Mr. Butler found honey to be so good for the health that he was incited to write his book out of charity; and yet he says, "I am out of doubt that this book of bees will in his infancy lie hidden in obscurity for a while."

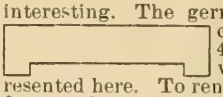
(The possessive pronoun "its" was not sanctioned till a later period—see Bible.)

The matter of sex in bees in those days seems to have been hidden in perfect darkness; and here is where their greatest blunders were generally made. The queen was regarded as a male; but Butler's mind begins to get through the fog, and even to dispel it. Just hear him go on: "Aristotle calleth their governor *basileus* (*rex*, or king). As many as followed him, searching no farther than he did, were contente to say as he did. So that I am enforced (vnless I will choose rather to offend in *rebus* (things) than in *vocibus* (words) by their leaue and thine (learned reader) to straine the common signification of the word "rex," and in such places to translate it *queene*, sith [since] the males heer beare no sway at al, this being a feminine kingdom."

The first chapter of the book is devoted to a description of bees, and a very good one it is. Of course, the old blacks seem to be the only ones alluded to. In this chapter we read that bees have dim sight but good smelling; it is safer to walk among them than to stand; morning is the time to stir them; time alone can cure stings; they dislike hair, but do not care for wool. A bee-keeper must be sweet, sober, quiet, chaste, cleanly, and familiar, "so wil they loue thee."

The surroundings of an apiary, described in chapter 2, are just what would be considered good to-day.

Chapter 3 treats of hives. The process of making the old straw and wicker skeps is quite interesting. The germ of the modern frame



consists of a piece of lath, 4 inches long and an inch wide, hollowed out as represented here. To render an old straw skep fit for use, the author goes about it thus: "If you thinke your former dressing will not make it sweet enough, then let a hogge eat 2 or 3 handfuls of mault or peas or other corn in the hiue; meane while doe you so turne the hiue that the fome or froth, which the hogge maketh in eating may go all about the hiue. And then wipe the hiue lightly with a linen cloath, and so will the Bees like this hiue better than a new."

The gravity with which the above is related, and the vision of that imperturbable "hogge," have afforded me an immense fund of laughter. And yet those Britishers are averse to American honey and pork!

It is impossible to describe here Mr. Butler's treatment of swarms and general management of bees. It is all interesting. Like most of the old bee-books it winds up with a religious talk. In this case it is an exhortation to return to the Jewish custom of paying tithes to the church. The author censures the Papists severely for having broken up the custom, and "for having robbed the people to build idle monasteries." The religious heat of 1609 was intense in England, for it was mingled largely with their political issues. In fact, this book was hardly before the public when that feeling broke into flame, and the British Isles became one vast sea of confusion, anarchy, bloodshed, murder, arson, and all horrors combined—the whole inferno rendered the more ghastly by the lurid flames from burning village and hamlet; and when peace returned, the doctrine of the "divine right of kings," either religious or political, was for ever buried by the Anglo-Saxon race, and the United States made possible.

Medina, June 9. W. P. R.

HIVES AND THE WINTER PROBLEM.

SOME PRACTICAL AND INTERESTING OBSERVATIONS.

Since pulling bees through five months of almost incessant winter, one should learn something in regard to wintering, if there is any thing left to learn; and it just occurs to me there will always be unsolved problems in apiculture. It may be out of season to talk about wintering; but I for one am liable to forget it if I don't speak my piece "while yet in memory fresh it dwells." I prepared my bees in several different ways for winter—chaff hives, sealed-cover hives, chaff cushion on some, others with folded gunny sacks between the frames and cover, or top-board. All except chaff hives were in the cellar. I also experimented with tight bottoms, Miller's bottom-boards, no bottom-boards, and wire cloth. In regard to the chaff hives, they seemed to answer all right for winter, only that they lost too heavily in bees. In the cellar the tight-bottom hives, both with sealed cover and pads, lost greatly in numbers by mold. The sealed-cover hives all showed mold from condensed moisture. The Miller bottom-boards showed considerably less mold, either with or without cushions; in fact, they were about as good as wire cloth, if the latter were left only a bee-space below the frames, thereby holding all the dead bees in contact with the frames.

Two things I am sure at present I do not want; namely, tight bottoms and sealed covers. Taking all things into consideration, I have arrived at the conclusion that the proper method of wintering is about as follows: There should

be strong colonies in eight, nine, or ten frames, *without bottoms*, or at least wire cloth held about two or three inches below the frames by a wooden frame the size of the hive-bottom. The hives should be tiered as described in A. I. Root's circular, with a folded gunny sack between the tops of the frames and the top-board of each hive. The lower tier of hives should be two feet from the floor of the cellar, which should be dry and dark. Light, and extremes of temperature, have more to do in rendering bees restless than bushels of fruit and vegetables. They should be put away as described above by the middle of October, and allowed to remain as quiet as possible till the 1st of March, not later than the 15th, if there are some nice days so they can fly. When on the summer stands at this early date they should be protected against sudden changes of temperature by a "case" made by driving, for each hive or each group of hives—for groups I prefer the way pictured in GLEANINGS last fall — four 2x2 oak posts in the ground so they will, when boarded up on the outside like a house, leave a space of six or eight inches from the walls of the brood-chamber of the hive or group as the case may be. The fronts of hives should be nearer the case wall than other sides, in order to get an exit for the bees with least travel for them and least work for the apiarist or carpenter. There should be a cover that will shed rain. With packing I think this would be the best plan to obtain early breeding. Remove the packing and leave the case for protection against heat in the summer and cold in the fall. Bees will work better in hot weather, and finish better in cool, if in a protected case like the above. Though the bees are removed from the cases to the cellar, the apiary retains much the same appearance in winter as in summer.

A. B. C.

HINTS TO ADVERTISERS.

S. F. TREGO OFFERS SOME SUGGESTIONS AND CRITICISMS.

I noticed your "hint to advertisers," on p. 360, May 1. I will say that the cut in our ad. that you refer to is not my invention, but was designed by C. W. Harper, Columbus, O. The wording and displaying of an ad. is far more important than many think. You can not buy your space, scribble a few hasty lines to fill it, and expect to make big sales; for if you do you will surely be disappointed. An ad. must be carefully worded to induce the public to "shell out;" but woe to the man who makes them "shell out" and then does not live up to what he claims in his ad. He may get along for a time, but he will surely disappear from view in time.

You mention the W. T. Falconer Co.'s "A New Hive" as being a good catch-line. I consider it good; but could it not have been better if it had actually referred to some new hive? You see, as it is, the reader is deceived into reading it, in the hope of learning of some new hive. Now, suppose he is a beginner, and does not know of the high standing of the firm mentioned. My theory is, that he would think something like this: "Now, that fellow has fooled me into reading his ad.; what might he do if I send him my money?" We will suppose he turns to p. 334. The first ad. says, "What stood the test . . . for 15 years?" You can almost see that new bee-man reach for pen and paper in his haste to get that free illustrated catalogue that Hilton offers.

I think that, if I had written that ad. for the Falconers, I would have put the words, "We made them," for the catch-line, and then in capitals put "Section-cases used in New York exhibit at World's Fair (using larger type for "World's Fair"). I think I had better let up on this firm or they may think I want to run their business; but, gentlemen, I don't. I have all I can do to run my own. I consider Nebel's "Monkey" very catchy; but they are overworking the poor fellow. Suppose I had read their ad., "Don't monkey your time away, but order your supplies early;" then a week later I want queens, and in looking over the advertisements of queens I see their "Don't monkey with cross bees," but I think it is the same old monkey "monkeying his time away," so I pass it by, as the "cross bees" is in small type. I see in the *A. B. J.* they fix it this way:

Don't Monkey with CROSS BEES.

which I think is much better.

As a general thing, if the ad. is changed every issue it will pay better. Any one who does $50.00 worth of advertising in a year should read *Printer's Ink*, published at 10 Spruce St., New York, at $2.00 per year (weekly). It is to the advertising profession what GLEANINGS is to the bee-keeping—"the top of the pile."

S. F. TREGO.

Swedona, Ill.

BEE-VEIL FOR LADIES.

HOW TO MAKE ONE.

All the year I have tried to find time to tell you how I made a bee-veil that has been a comfort to me, and perhaps others would like it. Take a piece of cheese-cloth, 60 inches long and 27 wide; sew the ends together. On one side make a two-inch hem, and make two rows of stitching, half an inch apart, to run an elastic cord through to fit a hat-crown. On the lower edge the hem need not be so wide—just sufficient to admit an elastic ¾ of an inch wide. Take a piece of fine black brussels-net veiling, 15x12, and sew it on about three or four inches from the top; cut away the cloth below. This, of course, is to look through. In some I put about the same-sized piece of a coarser quality of net in the back, to let the air pass through. The elastic ribbon for the lower hem should be 32 inches long, or long enough to fit the shoulders snugly of the person it is for. After it is run through the hem, the ends must be securely fastened. Stick a pin in the center of the lower hem in the back (after the elastic has been run through and drawn up), and on each side, about four inches from the pin, sew on a piece of elastic, eight inches long, or long enough to reach under the arm and fasten on a button in front. I sew a piece of muslin on the ends, in which to make the button-holes. The buttons should be near the arms in front. I make mine to fit comfortably, yet tight enough so that no bee can crawl under; for I don't want to be in a cage with a bee, even if I do think lots of them.

One great comfort with this veil is, that one can easily run the handkerchief under the elastic, to mop the brow—a thing I have to do pretty often when working with bees. When I know they can not crawl down my neck, nor strike me in the face, I feel pretty safe while working with them. I fasten my sleeves closely around my wrists, and never fear their stinging my hands, yet they sometimes do; but I can't work with gloves on.

London, O., May 6. MRS. VINNIE PHIFER.

JAKE SMITH'S LETTERS.

TRUBBLE INTO THE MEETIN HOUSE.

MR *A. I. Gleenings—deer Sir:*—You know I was a telling you how Missus Bleeker was a sayin, "It's too bad, too bad," and then Missus Welder started for Joe Parks. Sez Missus Welder to Missus Parks, sez she, "I was jist a goin by, and I thought Ide drop in and see if you wood let me hev your reseat for making pickels. You do make the most charmin pickels." And she praised sum more of Missus Parks cookin, for Missus Parks is a champean cook, and no mistake.

Then she sed to Missus Parks, sez she, "Missus Bleeker was a tellin me it was too bad they was so much hard feelin about our preecher."

"Why, you doant tell me!" sed Missus Parks. "I haddent herd a word of it."

"Yes," sez Missus Welder; "and, as Missus Bleeker was a sayin, we must do what's for the best. Of coarse, it woont do to hev enny trubel into the church. We much better let the preecher go than to hev enny dissention. A divided church cant never prosper, and we must hev peas at enny price. If they is as mutch feeling as Missus Bleeker was a tockin about, it's no use a tryin to keep Mr. Bond enny longer."

The nex day Missus Parks was at the store a gittin sum sort a dry goods, and Nat Boucher was a waitin on her. Nat oans the store, and his wife is a member of the church. Sez Missus Parks to him, sez she, "Who do you spose weal git for our noo preecher?" sez she.

"Why, I diddent know Mr. Bond was goin to leave," sez Nat. "I thot he was well satisfide and liked the place."

"I doant know but he's satisfide enuff," sez Missus Parks, "but Missus Bleeker sez they is sitch a number dissatisfide with him that it's no use tryin to keep things smooth enny longer, and for the sake of peas we must all give up our oan feelins. And if Missus Bleeker has turned agin him it's no use to stand out, for Missus Bleeker has always thot the world of him."

"Well, now, Ime kind a sorry," sez Nat, "for I always liked the man, for all I doant never go to meetin mutch."

"Yes," sez Missus Parks, "it's a grate pity, but ennything's better than to hev trubble in the church."

Well, things kep on in that way for some time. 1 day Welder cums to me, and sez he, "Jake, what do you think of the condishen of our church?"

"It seems in pirty fair condishen," sez I. "We hed a reel good prayer-meetin last nite," sez I. Welder doant never tend prayer-meetin.

"Oh!" sez he. "I diddent mean the condishen of the prayer-meetin, but of the church. You know that the general feeling is against Bond. Now, if youl use your influents with him I think you can get him to resine."

"I doant think Ive enny call to use my influents in that way," sez I. "And I diddent know the general feelin was agin our preecher. He jist soots me, and I think he soots most of the members."

"Well, now, that's where you make a mistake," sez he. "Besides yourself and a fue uththers whitch you influents, they haint a sole that wants him to stay."

"I diddent know I was usin enny influents," sez I; "but it doant seem to me that I stand as much alone as you make out. But Ime always willin to give in to the majority, and the best way will be to take a vote and see how many do stand on my side."

"Oh, no!" sez he, "that wood never do, to draw a line and stur up strife. We must keep peas in the church. It wood never do to take a vote. If you hev the wellfare of the church to hart, yule withdraw yure oppasishen, and let all go smooth."

It diddent seem rite clear to me how I was making oppasishen, but I diddent say nothin jist then, and we parted. JAKE SMITH.

The end next time.

BALLOONING.

HOW ONE FEELS UP IN THE AIR, A MILE ABOVE GROUND; FROM THE PEN OF A BEE-KEEPER.

[A short time ago we received a letter from W. T. Heddon, son of James H., of Dowagiac, Mich., asking whether we should like to have an article on ballooning. We noticed on his stationery the words "Dowagiac Aëronautical Combination;" and we had also heard that Mr. Heddon, Jr., had made several successful balloon ascensions. Well, we thought our readers might like to hear how "one feels a mile up in the air," especially as it comes from the pen of a bee-keeper, and we asked him to send the article in question.

There are not many of us, we venture to say, who are able to speak from experience on such a subject.]

The history of aërostation dates back to 1782, when the brothers Montgolfier, of France, made public their new discovery. After varied and successful experiments in their laboratory, they tried a larger balloon containing 65 cubic feet of heated air, in the open air, which rose to a height of from 200 to 300 ft., and, sailing off some distance, fell upon the neighboring hills. They then made a very large and strong balloon, with which they brought their discovery before the public.

June 5, 1783, the nobility of the vicinity were invited to be present at the exhibition. After some minutes consumed in inflating, the balloon was released, which, to the vast surprise of the doubting spectators, arose to a height of 3000 ft. It then described a horizontal plane of 7200 feet, and gently settled to the ground. This for ever crowned the brothers with the glory of a most astonishing discovery.

After serious trouble in obtaining the king's permission, the first aërial voyage was made from the gardens of La Mutte, near Paris, by Pilatre des Roziers and Marquis d'Arlandes, on the 21st of Oct., 1783. The balloon used was a mammoth structure, being 70 ft. high and 45 ft. in diameter, with a large car containing a firegrate and a number of bundles of straw, which were used in kindling the fire on their trip over Paris, that they might ascend and descend at will. The voyage consumed 25 minutes; their highest altitude was 3000 ft., and the flight 6 miles from starting-point.

Although from Dec. 1, 1783, silk balloons filled with hydrogen gas were extensively used, the Montgolfier (or hot-air) balloon was preferred by many, notwithstanding the danger of its burning in mid-air, from the fire used for continuous inflation.

The longest ascent ever made was in a gas-balloon, by Green and his two friends, Monk Mason, and a gentleman named Molland. In 1836 they started from London and landed in the Duchy of Nassau, Wiberg, Germany, 1200 miles distant. The longest and highest ascent in a Montgolfier was made from Versailles the 23d of June, 1784, by Roziers and Proust. After traveling five miles they kindled the fire and arose to the height of 11,732 ft., among clouds of snow, where they remained for 8 minutes, descending to within 3000 ft., of the earth, and landing in Compeign, 40 miles away.

Blanchard, having tried the virtues of the parachute by dropping his dog from a gas-balloon, at a height of 6500 ft., in 1802 citizen Ganerin leaped from a height of 1200 ft., with the aid of a parachute provided with a basket, in which he sat. At first the descent was very rapid; but as soon as the cloth spread, the velocity was checked and he reached the ground safely with more or less oscillations. Subsequently they were used as a safeguard, in case the balloon should be wrecked by fire or wind.

At a fair in Venice, in 1617, there was on exhibition a small parachute, which, although more crude in mechanism that Ganerin's, combined the same principles; and, 189 years before his feat at Paris, a mountebank of Siam frequently climbed a high bamboo-tree and leaped into space with two umbrella-like contrivances, which were so large he would sometimes drift far away, lighting on houses and in the river, though fortunately without disaster.

According to Greek mythology, in the fourth century B. C. a certain Archytas constructed a wooden pigeon, fitted with a spring, which, when wound up, would fly for some time. There is little doubt that such attempts were made; for in the 13th century, Blanchard, in his flying-machine, used many of the same principles. The most perfect device was that of Besnier, of Maine, who, in 1678, made various experiments, and reached that degree of perfection which enabled him to leap from the tops of high buildings, and, by vigorously working his wings, sail windward several hundred yards.

Solving the problem of aërial navigation had long been given up in despair when the use of balloons seemed to throw a new ray of light on the subject, and all efforts were exerted in the use of wings, paddles, sails, and rudders, but all to no avail. From Besnier's time to the present day, no improvements have been made in airships, although several fake machines have drawn much attention and money from the public.

Thus far, aëronautics has been useful in three ways; viz., the solution of many problems of science through the use of instruments at different elevations; while in warfare, captive balloons were used in taking observations in the enemies' camp; and, lastly, has benefited associations employing, and those employed in making balloon ascensions.

There are no better balloons to-day than in Montgolfier's time; and with practical inventors the idea of navigating the air by their use has been abandoned, and will remain so unless man can control the winds, as they are entirely at the mercy of the currents. Indeed, balloons are so delicate and sensitive, that, while floating horizontally through space, the slightest move shakes the whole structure. From this it is plainly seen, that, even if it were possible to guide them against the wind, the pressure would be sufficient to collapse such a delicate affair. Undoubtedly, if this wonderful problem is ever solved it will be through means yet unknown, and electricity will be the motive power. Machines using large wings can never be practical; like balloons, the slightest sudden breeze would upset them.

Being an electrician, and desiring to become familiar with the currents, and determine to what extent electricity might be applied to airships, I received instructions from Baldwin Brothers, of Quincy, Ill., the inventors of the modern parachute, and made my first ascension in a hot-air balloon, with parachute descent, at Dowagiac, Mich. At 6 P. M. I seated myself in the trapeze, and, bidding my friends good-by, the balloon was released. For the first 300 ft. there was a most thrilling sensation of being lifted from the earth, and at no time did the ground appear to be dropping away, as described by many. The crowded park which I had just left now looked like a mass of moving black and white, and, after overlooking the country, viewing the many lakes and towns within a radius of 12 or 15 miles, it was indeed impossible to distinguish the business portions of our city from dwellings which were nearly a mile away. My first surprise was the clearness with which all earthly sounds could be heard—plainly hearing the cries of people one mile below to "cut her off;" but perceiving the country beyond to be an equally good landing-place, and that I was not yet descending in the least, which is discerned by the flutter of the parachute in a downward course, I prolonged those blissful moments.

Directly under me I could plainly see carriages, and their occupants, which looked less than half size, waving their hats and handkerchiefs. At this height the whole world looked like a mat of velvet, perfectly clean and smooth; hills, hollows, and shrubbery not being noticeable. The lakes had a silvery sparkle, and the river looked like a silver chain thrown carelessly along the surface, while patches of wood were black spots. Houses and barns were the same color, and all alike, and country roads gave the ground a checkerboard appearance. There was no feeling of fear of falling; nor did it seem possible that, if I should jump out, I should go down any more than up, but that I should remain perfectly still. The earth was like a painting, and no one would have any more fear of falling from a balloon than into a birds-eye view of a city. Being so far away, and entirely disconnected from tangible earthly substances, one can not fully realize his position. Persons who would become dizzy in looking over the wall of high buildings would be at perfect ease away up in a balloon.

The balloon now beginning to descend a trifle, and not desiring to disappoint my friends who were running and driving their fastest to see the landing, I pulled the register-cord, which, operating the cut-off knife at the top of the parachute, launched me into space. To my utmost surprise there was no feeling of dropping, such as experienced in elevators, but I seemed to be sitting perfectly quiet in space, without support. After falling 125 feet, which was determined from an instantaneous photograph taken just as the parachute opened, the linen above my head snapped like a sheet in the wind, and spread to its full capacity of 22 feet in diameter.

As a demonstration of my coolness, to those below, I now hung by my legs head down; waved my arms, and shouted, until, finding myself swinging to and fro about 20 feet like a pendulum, I sat erect watching the movements of my life-protector. While I should be sick from swinging in a hammock, the violent mo-

tion of the parachute had no effect. When within about 1000 feet of the ground I hung by my hands, and soon landed on my feet 1¼ miles away, with the same force of jumping 6 or 8 feet. The whole voyage consumed five minutes, and the descent was made in one minute.

The sensations of ballooning are so delightful that nearly all who muster the courage to make the trial trip become aëronauts, whether adapted to the business or not, which is the cause of so many fatal accidents. Nearly all accidents in parachuting have been from a lack of mechanical ingenuity and coolness. Coolness, good judgment, and mechanical skill, are the indespensable qualities of a successful aëronaut. W. T. HEDDON.

LADIES' CONVERSAZIONE.

A LETTER FROM MRS. HARRISON.

I left my southern home at St. Andrew's Bay, Fla., May 2, for my old home in Peoria, Ill., and took passage at 3 P. M. upon the "Gulf City," a steamer running between Apalachicola and Mobile. When the steamer loosened her moorings we went upon deck and watched our friends waving their handkerchiefs, and wishing us a pleasant journey, as they stood upon the fast-receding pier. All on board anticipated a pleasant trip across the Gulf of Mexico; but, "the best-laid plans of mice and men gang aft aglee." I stayed upon the deck, enjoying the pure, soft, sweet southern air, the lovely scenery of the shores, and watched the white boiling waters and the gambols of the porpoise. It was with regret that we took our departure from that lovely sheet of water known as St. Andrew's Bay, and passed out upon the Gulf of Mexico. The sailors talked of its being "lumpy," and, procuring my knitting, worked industriously, and, with teeth clenched, tried to still the fast-surging billows within. I commanded the tempest within me to "be still; I shall not be sick; what if the steamer does roll?" The captain said, "Lady, if you desire to go below, let me know and I'll go with you." The strong will was conquered at last; the knitting laid aside, and I laid me down upon the deck, my head pillowed upon a coil of rope.

As night drew near, a sailor came and escorted me to a state-room. The captain, in his rounds, looking after the comfort and safety of his passengers, inquired if I would have some tea. The idea! Tea! Holding on to prevent rolling from the berth! I commanded the surging billows within to "be still," and calmly waited events. At an upheaval, I leaped from the berth and sought a receptacle upon a stand, tied firmly to a friendly post, which I grasped. A comfortable arm-chair stood near, in which I sat, and I was soon traveling with lightning speed from one side of the vessel to the other, when I was rescued from my perilous condition by the strong arms of a Numidian Hercules, and conducted to my berth, into which I rolled, striking my head against the window-sill, raising a lump as large as an egg.

That great storm, which had originated in Texas, and was crossing the gulf on its way to the Atlantic coast, had crossed our track and handled us roughly. When we passed from the Gulf of Mexico into Pensacola Bay the steamer stopped rolling, and I looked from my state-room window out upon the dark waters, and enjoyed a magnificent view of the moonlight upon the water. When daylight dawned I dressed and went upon deck, and had a view of the lighthouse, navy-yard, and quarantine station, where we moored. We received a clean bill of health, and were soon wending our way through the ships of all nations, to our pier.

As I wended my way through the streets of Pensacola my bee-keeping eye was on the alert to discover honey-secreting flowers. My sight was gladdened by the sight of a magnificent magnolia-tree. Words fail me to describe its grandeur. Towering aloft with spreading branches, covered with thick, large, well-varnished leaves, were pearly-white flowers, as large as oyster-bowls, with petals five inches in length. I was not able to learn whether the magnolia is rich in nectar. I saw a number of large umbrella-trees, with their small purplish flowers hanging in panicles. These trees are correctly named, as their long pointed leaves overlap each other, producing a perfect shade, and protection from rain.

OBSERVATIONS DURING TRAVEL.

I saw no bee-hives during the route north. In Alabama, dogwoods and honeysuckles were in bloom; and these and the red clay soil were indications of good fruit-land. During a day spent at Nashville, I visited the grounds of Vanderbilt University, comprising 76 acres, which were planted to trees of various kinds. I noticed one, at a distance, resembling a locust in full bloom; but on a nearer approach to it I discovered it was not the bloom, as it did not resemble the locust in having two wings, a banner, and a keel, but it hung in a loose panicle, and the branches had a drooping effect, like a weeping-willow. I am sure it must be a honey-tree, though I saw no bees at work upon the bloom. A resident told me he thought it was a mountain-beech, and quite rare in that locality. Another tree that interested me resembled a catalpa in leaf and spray, but the bloom was bell-shaped, in color purple, and the seed round like a nut, and not growing in a pod like the catalpa. If any of our readers who are acquainted with these trees will give us a description of them it will be gratefully received.

Peoria, Ill. MRS. L. HARRISON.

HOW TO BE WELL.

SOMETHING ABOUT "BREAD AND MILK."

Mr. Root:—We have been much interested in your articles on diet. For several years we have been using entire-wheat flour for bread and gems. I have been expecting you to tell us how much better entire-wheat flour is than fine white flour. I know it is not much used in a good many places; and as you have not spoken of it I concluded to send you a few recipes for preparing it. Some of us who have weak stomachs find that eating graham flour for a length of time is apt to be hurtful. It will start the "beer-plant" very soon. The entire-wheat flour is as sweet as graham, and lacks the coarse taste.

We were especially pleased with what you said about milk. We have found a way of preparing it that makes it not only the best drink on earth, but a powerful stimulant. I will copy from the work of one of Chicago's best physicians, Dr. Alice Stockham; and I am sure that, if you will try it a few days, you will find it a wonderful help when you feel worn out and run down.

Add to new milk one-tenth water, and heat over a water bath to a temperature of 120°. Cheese-makers testify that the addition of water prevents rennet from coagulating the casein. In the stomach, also, warm water prevents the pepsin from curdling the milk. If it is as warm as the stomach, and does not

coagulate, it will be taken up by the absorbents, and conveyed directly to the blood without going through the process of digestion. I have known persons very near fainting, and persons very weak, to receive great benefit from using milk prepared as above. It must be taken as hot as possible; and while at first it does not taste as good as milk without water, in a short time one acquires a decided relish for it.

For gems of entire-wheat flour, take one pint of new milk, one pint of entire-wheat flour; stir together, and add one well-beaten egg. It can be baked in any kind of gem-pans. I use the deep iron ones, and have them very hot before filling; do not use any salt nor baking-powder. They are as light as sponge cake, and will not hurt the little folks. The entire-wheat flour makes very nice gems, made as you do graham, but I use three cups of flour, two cups of cold water, one-half cup of sweet milk, no salt, and use the small deep iron pans. Heat very hot on top of the stove; fill about half full, and have the oven very hot; bake ten minutes on the top grate, then thirty minutes on the bottom of the oven. They will not fall when cold if you get them just right, but are nice and light. It makes splendid raised bread also. The bread must not be kneaded more than can be helped to put the loaves in shape. I use half milk and half water, but raise the bread once and have the dough soft. I think one-third fine flour is better for the raised bread. I hope you will try the entire-wheat flour, and let us know whether you find it as good as every one does who has tried it in this part of the country.

I have written this to you because I know that fine flour is largely to blame for the poor health of our people, and because you can do and are doing much to help the readers of GLEANINGS, by your health-talks, to a better way of living.

The seeds we bought of you last fall were the best we ever planted. They all came up, every seed, I think. We have bought seed of a good many Eastern seedsmen, but never found any as good as yours proved to be.

MRS. JOHN COLLINS.

Elsinore, Cal., April 29.

[My good friend, we used entire-wheat flour for several years. It is mentioned in GLEANINGS, and at one time there was quite a trade in it. We had it shipped in ten-barrel lots from Chicago. The reason why we gave it up was because the proprietor sold out, and his successor finally gave up the business, if I remember correctly. Another thing, it did not keep like common flour. The latter is better when it is old; but for some reason which I can not understand, entire-wheat flour spoiled by being kept several months, and this gave it a backset. Now, if you can tell us of a miller, or anybody else, who will furnish us with entire-wheat flour, prepared in such a manner that it will not spoil, say under a year, we shall be under great obligations to you. Yes, there was another objection. A good many people who thought at first it was the nicest thing in the world, got tired of it after a time, and went back to common flour and graham.

Many thanks for your kind words; but I am afraid you give me more credit than I deserve in regard to seeds. A great part of the seeds we sell are bought of eastern dealers. However, we are careful of whom we buy; and about as soon as we make a purchase we plant some of the seed, either in the greenhouse or outdoors; and in this way we manage to have our seed generally reliable. I tell you, though, my good friend, it takes a deal of watching and care, and, a good many times, much exhortation to the clerks who have our seed department in charge. There are more kinks, and chances of loss, and mistakes, in the seed-business, than one would believe who "hadn't been there."

I am glad to hear what you say about milk. The more experience I have with it, the more I do believe it is the one stimulus, if milk can be called a stimulus, prepared by God's own hand for his children. A few days ago, when it rained almost three days without stopping a "minute" (in spite of the Weather Bureau), some of our White Wonder chickens were out in the rye; and before we knew it they were stiff and cold. They were not quite dead, however, but I think they would have been had not the writer got around and prescribed warm milk in doses of a drop at a time, repeated often. They were so far gone that they did not seem to want it; but I insisted they must have it, whether or no. In an hour or two Mrs. Root reported that they were "able to sit up and talk." Of course, the talk was rather feeble, and Huber and Carrie were inclined to poke fun at mamma because she talked about chickens "sitting up." We took their inconsiderate mother and shut her up in the middle of the tool-house, where the ground was as dry as a chip, in spite of the pouring wetness outside. Here they weathered the storms as "chirpy" as could be. Say! can't some of you poultry-men give us a race of mother-hens that will not lead their chicks right off through the wet grass when it rains both day and night? I declare! I almost forgot that we were talking about milk as a stimulus; and here I am, away off in the chicken-business—almost as bad as the silly mother who led her chicks off through the wet rye.]

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

A KIND WORD FROM A. E. MANUM.

I am very much interested in your articles on gardening and fruit culture. They have been of much benefit to me. I should enjoy a visit to the Home of the Honey-bee, and may be I shall some of these fine days, and then call on friend Terry, and continue on west, and tickle that doctor's nose with some of his "Stray Straws."

We are having a very backward spring here. To-day my bees brought in the first pollen of the season, and hardly a showing at that. I hear that bees have wintered very poorly in this county. My own loss is greater than ever before, being 14⅔%, with about 1% more that are light, and may dwindle yet.

Bristol, Vt. A. E. MANUM.

A SUGGESTION FOR PREVENTING AFTER-SWARMS.

Would it not be a safe and certain plan of preventing after-swarms to place the parent colony on top of the supers on the swarm, with a bee-escape between super and parent colony, so that every bee leaving it would be added to the swarm, removing parent colony on the 8th day?

Should the parent colony be left till a queen was hatched, would she be allowed to pass out through the colony below to mate—the queen-excluder being removed, of course?

Willmar, Minn. HELGE NELSON.

[The plan might work very satisfactorily, but we would suggest destroying all cells, save a few choice ones, if the old queen is a good one, and letting said cells hatch in nuclei for the

purpose. We doubt whether a young queen allowed to hatch above would get through the hive safely with the swarm.]

PUNK AS A SMOKER FUEL.

I have tried nearly every thing in shape of a smoker fuel, but I have found nothing to equal what we call punk—a corky, fungus substance that grows around old stumps. When this is thoroughly dried, by using a little oil or shavings to start it you have a fuel that is lasting, and always smoking. It seems to make no difference whether your smoker has a draft or not; standing upside down or in any position it smokes just the same. I have frequently, when through work, emptied the contents of my smoker on the ground, and dumped a pail of water over it; and when happening to pass by it an hour later I have found it smoking as much as ever. The smoke is not as offensive as that from shavings or oily waste.

Somerville, N. Y. L. B. THATCHER.

[We formerly used punk, and liked it very much; but shavings are just as good, more available, and cheaper. They are offensive to bees, and that is just what we want of them.]

GOVERNMENT DISTILLERIES, ETC.

Our house was burned with contents; all bee-literature is gone, with library. Cause, my husband reported an illicit distillery to the government officers. Tobacco and whisky go together here. Four-year-old children chew the one and drink the other. M. E. HAWKINS.

Horse Cove, N. C.

[My good friend, your report is a sad one; yet there are some encouraging glimpses about it after all. Even if our government does have some sort of share in *legal* distilleries, it is very severe on *illegal* ones; and if it is really true that you and your family have suffered for righteousness' sake, and that others are suffering in a similar way, it seems to me the government should take some means to recompense those who are bold enough to risk the consequences of exposing crime. I am sure the sympathies of our readers are with you in your attempts to bring the guilty to justice. May God help us if there are many localities like what the statement in your last sentence indicates. It indicates the tremendous need there is for more Sunday-schools, more Endeavor Societies, etc.]

SHALLOW VS. DEEP FRAMES FOR WINTERING.

I have to plead guilty to a loss of 16 out of 57, and possibly two or three to hear from later. I think, though, my own losses could have been entirely avoided had I known in advance the kind of winter we were to experience, and made sufficient preparation for it, as my losses were all in one division of the apiary. Perhaps, though, it will be a lesson well learned (though slightly expensive), and the experience derived prove of more practical value than the worth of the colonies lost. I am using the Adair frame at present, and find that, in comparison with the shallower Langstroth the past winter, it is much better, but still not as good as the much deeper (13-inch) box hive. Now, don't think that I am going to advocate the box hive. I am merely drawing comparisons on the wintering problem. The shallow Langstroth frame seems to give too small a space below the sealed honey for a successful outdoor wintering frame, as the bees in a protracted cold spell begin to crawl upward on the sealed honey; and a colony that comes to the top of the frames during a six-weeks' cold spell may as well be charged to the profit-and-loss account then and there.

The theory of handling colonies as colonies, and that, if we use double-walled and chaff hives, the bees will do the rest, has got to go, and scientific bee-keeping has got to be practiced on scientific principles. Any one can winter well in the right kind of winter; but we need more light on the "bad-winter" subject; and, what is more, we need it badly. My losses have been heavier the past winter than in the five preceding winters put together.

Baptisttown, N. J., Apr. 10. WM. W. CASE.

WHAT WE ARE AND ARE NOT SURE OF IN BEE CULTURE.

The bees nearly all froze last winter here. Some men lost all they had. The chaff hives and a good warm cover saved mine. The bees seem to do better by taking the gum cover off and spreading a coffee-sack on the frames. The moisture then comes up through, and the box does not get damp. I believe the honey business in our country is like the white man and the Indian with the turkey and the buzzard. If you have a large strong hive, they swarm; and if you have a small hive, you get no honey, every time. It is what we expect that makes life worth living. We expect honey this year. If we don't get it we will try it next year, and so on. The only thing I have been sure of is a bunged eye once in a while; but still I like the little sharp-footed fellows. I think I am like the Democrats with Cleveland—they like him for the enemies he has made. I am a young bee-keeper, and have told a little of my trials with bees, and now wait to hear from some of the cubs in the business, as we have been reading from the master hands so long.

Irwin, Pa., April 13. O. L. MCGREW.

[That's so. If a colony is strong enough to work well in the sections it will swarm; if it is weak enough not to swarm, it won't get much honey. We therefore look forward with relief toward the non-swarming methods that have been proposed of late. See Trade Notes in the last two issues before this. Say, if you *really* don't want a "bunged eye," wear a good bee-veil; that is just what nearly all the "old cubs" do.]

NOT IN FAVOR OF THE OLD CHAFF HIVES.

My experience this very severe winter has rather cooled my faith in the virtues of chaff hives over single-walled hives. Last season Mrs. Brown hived a swarm above the frames in a chaff hive, and left them to go down on frames. This they concluded not to do, but began business in the upper story. The hive-cover was a gable-ended one, with two-inch side-walls between the roof and the hive. It did not fit down on the hive, and left space for bees to pass in and out, and was very airy all around.

When discovered, the bees had built comb on the roof, and so much of it, and had so much brood, that I concluded to let them have their own way. They certainly were about as much exposed as they could well be and not be entirely out of doors, and yet they came through winter in very fine condition. About the 10th of April I concluded I would transfer them to the frames. I found them very strong, with lots of sealed and unsealed brood.

The colony that sent out a swarm to-day was wintered in a single-walled hive. When I discovered the swarm it had settled on an elder-bush, and was a fine large one; but before I got ready to hive it, it left the bush and went back into the hive. After they got settled I concluded

to divide them and save the trouble of watching them so closely. I found the hive literally packed with bees.

With these two exceptions, all my bees were in chaff hives, and yet these two came through winter quite as strong, if not stronger, and as early, or earlier, to work at brood-rearing than any of the rest. None of my bees had any thing over frames except a single cover of grain-sacks. A part of them had sections on and a part none. J. M. Brown.

Mt. Sterling, Ky., May 6.

[Did you ever! Just as we are about concluding that the old chaff hives are the things to winter bees in, here comes one who is about losing faith in them. How we do differ in experiences!]

PUTTING ON SUPERS; WHEN NOT TO DO IT; INSTRUCTIONS TO BEGINNERS.

Many, in seeking to hasten the storage of honey, retard it, and very much diminish the amount of surplus by too great haste. In this latitude (Central Illinois) the first of June is generally soon enough, and very often the 10th to the 15th is plenty early to place supers on the hives where the bees are in normal condition.

Some bee-keepers in this locality are in the habit of giving supers to some of their strongest colonies during apple-bloom, in the hope of obtaining a few pounds of the famous apple-blossom honey. About once in seven years they are rewarded (?) with a few pounds to the colony. But I venture the assertion that, for every pound of this much-prized nectar received, they have sacrificed some forty pounds of nice white-clover honey by the practice.

In the spring of 1889 the white clover began blooming here about the 26th of April, some ten days earlier than usual; and by the 10th of May the pastures and commons were white with it. As the weather was warm, my bees in fairly good condition, and some honey was coming in, I thought it was about time to begin putting on supers. Accordingly, on the 14th I "went at it" and placed supers on all the strong colonies, which numbered about two-thirds of the yard. In a day or two the weather turned cool, and kept so cool and cloudy for a week that the secretion of nectar was almost entirely suspended. As a consequence, many of those not strong enough to take supers when the first were given were among the strongest by the first week in June; and some that were not given supers till the 10th of June gave me more surplus than some that I considered among the strongest on the 14th of May. Since then I have been slow about putting on supers, preferring, if any colonies became crowded for room, to take away a portion of their brood and give it to others not so fortunate rather than give supers before the time of rapid storing had arrived. W. J. Cullinan.

Quincy, Ill.

NEW HOFFMAN FRAME; SPACE AT THE END OF THE FRAMES.

I like the new Hoffman frame without the V edge on the end-bars. The bees will fill that little place solid with propolis, with plain edge. There is no place for bee-glue when the frames are properly wedged.

When examining bees in the spring I change ends with each alternate frame. This spreads the brood, and puts part of their honey too near the entrance, so they will remove it, giving the queen still more room. When used this way the L. frame is as good a reversible frame as I want. With a frame as shallow as the L., the honey is always placed in the end furthest away from the entrance, and *not* at the top. So reversible frames will not accomplish the desired result; but simply changing ends will.

I like Dr. Miller's idea of making the bottom of the frame shorter than the top. I would suggest, that the bottom-bar be made full length, with the ends trimmed to a point, and let the point, or end of the bottom-bar, project one-fourth inch. This will make it impossible to kill bees in removing frames, for the end of the frame can not touch the hive except where the point of the projecting end-bar touches. The hive could be made shorter, so as to make the smallest possible bee-space at the top end of the frame.

On page 920, Dec. 15, 1892, the Rambler describes the frame used by Mr. Hunt, having a bee-space around the end of the top-bar. In your footnote you say the objection to these would be, in hauling they would be liable to hop out of place. Instead of making them as Mr. Hunt does I would cut the rabbet ⅝ wide, and drive double-pointed tacks in the lower end of end-bar, letting the tacks project one-fourth inch. This will keep the frame true and square, and no possible chance for the frame to hop out, or to be placed in the hive wrong. The only change to be made is in the width of the rabbet of the hive. Having tried frames with a space at the end of the top-bar, I can say that it is a great advantage to have them so. W. C. Gathright.

Cameron, Texas, April 26.

[Of course, we will make changes in standard goods when so requested. If any one should prefer frames as above described, we can make them so; possibly, for the far South, such frames would be preferable.]

L. L. LANGSTROTH.

How pleasing to sight is that half-tone engraving,
With subject so sweet, and in perfect design,
Presented to all of the happy possessors
Of May the first Gleanings, page three thirty-nine!
The wide-spreading building, with bee-hives close by it,
Where frame hives by carloads they're making to sell;
And e'en father Langstroth, whose genius enabled
This once humble fact'ry's proportions to swell.
Inventive friend Langstroth,—
The bee-loving Langstroth,—
Dear old father Langstroth
We all love so well.

That hive in the foreground I hail as a treasure;
For oft, when I'm pensive, I in it may find
Such sweet recreation, such exquisite pleasure,
That comforting thoughts will return to my mind.
Those movable frames one can handle so nicely,—
Should we yet possess them? nobody can tell,
Were't not for the advent of this benefactor,—
Immortalized Langstroth we all love so well.—
Inventive friend Langstroth,—
The bee-loving Langstroth,—
Dear old father Langstroth
We all love so well.

How sweet seems that face, as in deep meditation
O'er all his achievement that meets there his gaze!
Or day and night study far back to young manhood,
And that dear companion he so loved to praise.
And while we are gazing, the thought we'll ne'er meet him
Ere he shall behold *her* makes bitter tears swell;
But we've consolation—in heav'n we shall meet him—
The dear father Langstroth we all love so well.
Inventive friend Langstroth,—
The bee-loving Langstroth,—
The dear father Langstroth
We all love so well.

Carbondale, Kan., May 15, J. H. Markley.

NOTES OF TRAVEL.

ON THE WHEEL.

The sleep of a laboring man is sweet.—Ecc. 5:12.

I have been, for weeks back, proposing to take a trip off on my wheel as soon as the roads got so they could be trusted for two or three days, and also as soon as I could get business fixed up a little ahead. With the tremendous plant-trade we have had, and the backward spring, I have been having more on my hands, perhaps, than I have any business having. I was restless and nervous nights, and I did not get my accustomed sleep. Mrs. Root and the boys urged me to go off and recruit up, no matter what happened to business. One night I was so nervous that my wife asked me what the trouble was. I told her that I dreamed of being at a bee-convention, and was called upon to deliver an address upon beeswax. I forgot, in my sleep, that time is usually given to speakers to make some preparation for their talk; but it seemed that I was there before the audience, with no preparation whatever,* so I gave a string of facts about beeswax. As I proceeded in my discourse I began to feel that it was too much dry details, and that my friends would expect A. I. Root to throw in a little pleasantry; and so I remarked, "Bee-keepers' wives sometimes call their husbands by the endearing term of 'Old Beeswax,' when they feel sorry for them;" but I was really too worn out and overworked to be funny, and so I woke up. Mrs. Root said I *must* start off for a vacation; so I fixed up affairs as well as I could, and started. Of course, we went on our wheels. I say *we*, for Ernest volunteered to go the first eight or ten miles with me, to "set the pace" and to see that my wheel was in trim for a long run. It is well he did, for every thing was tightened up so close before I started, that, when we got on to a bit of sandy road, the chain became rigid in passing the centers of the elliptical sprocket. While Ernest was giving a little more "slack," I took my first long draft of delicious spring water. He advised me not to drink much water or any thing else when on a long ride; but I told him I did not agree. A few miles more, and we reached one of my favorite haunts of last summer—a great soft-water spring that comes out of a cave in the rocks at the rate of almost a barrel a minute. As it sparkled over its gravelly bed, I drank again and again, and felt refreshed and invigorated. If there is a more delicious and refreshing drink on the face of the earth than the water of that Waltz spring, about two miles east of Sharon Center, in this county of Medina, I have never found it. The proprietor says that everbody can drink of these waters just as long and as much as he chooses, and no bad results ever follow. My experience agrees with this entirely. But I have always been there on a *wheel*, and have gone *away* on a wheel.

About ten o'clock I reached a celery-farm about four miles east of Copley, Summit Co. The proprietor, a young man, a relative of mine, seemed very glad to see me. I found him pulling manure out of the back end of a wagon with a potato-hook, said manure being drawn into deep trenches made in the black muck. After this liberal dose of rich old compost, the muck is pulled back over the manure, and the celery-plants are placed on top. Oh how beautiful his plant-garden did look! Thousands upon thousands of dark-green plants rested against the black mucky background, and looked like so many bright-green stars on a jet-black setting. Like myself, friend A. keeps lots of boys to pull out weeds, and do the transplanting. I should think he had a million beautiful plants; but none of his plants are for sale—they are simply for use on his own farm. After several years of experience his conclusion is about like my own—that nothing seems to suit celery as well as well-composted and well-rotted stable manure. This he buys in the city of Akron, and draws it on to his grounds all winter long, where it is piled up about four feet high, with the top of his heaps exactly level, and allowed to become well rotted before it is drawn out to the trenches. Like the rest of us, he has suffered from excessive rains, especially when it rained 60 hours without intermission during the middle of May.

"Why, friend A., isn't it possible for you to get a sufficient outlet, so your ditches would not fill clear up to the top, and drown out your stuff?"

He stopped a minute, and then said, "Listen!"

I listened, and there was a sort of chanking, or snorting, away over in the bushes in the swamp. Finally, said I, "What is that noise off in the woods?"

"Why, can't you tell by the sound?"

I thought there was something strangely familiar, and that I ought to "catch on;" but while memory was groping to fix on the point where I last heard such a sound as that, he replied, laughingly:

"Why, it is that very same steam-rooter that you pictured in GLEANINGS, and had so much to say about. It has finished its other job, and got over here, and is now tramping at a good pace over to my swamp, to let the water off."

Then we talked about the different kinds of celery. He raises only the White Plume and the Giant Pascal. He said that, if it had not been for the Pascal last season, his business would have been almost a failure. Then we talked about celery running up to seed. He says he invariably has trouble from plants started under glass; but when he begins to sow his seed in the open ground, there is but little if any further trouble. Some strains of seed shoot up more than others; but there are many things we do not quite understand, which seem to have an influence in the matter. You may remember I mentioned having a strain of White Plume that did not seem to run up to seed, even if the plants were started as early as the first of January. Well, a week ago I was proud to show some plants that were wintered over under glass. In fact, I was ready to swing my hat and tell you that I had made a success in wintering celery where it grew, on the plan of the new celery culture. The celery itself was on the wagon, and was beginning to sell pretty well. But we had four or five hot days, and I fear we did not give these plants quite enough water; for, almost with one accord, they started to send out seed-stalks. May be the bed got too dry; and my impression is, that, where strong roots are growing only seven inches apart, as in the new celery culture, there must be a tremendous amount of water or they will fail. The ground may be apparently wet all around them; but so many strong plants in so small a space literally lick the water up by the barrelfuls.

After giving my energetic and industrious young friend another exhortation to get him a *house* and *wife* before he went any further in building up a business I mounted my wheel once more. The road was beautiful, and I made the remaining three miles to the city of Akron in a very short time. Please remember I have not before failed to have a nap just before dinner, for many months. Here I was, doing heavy muscular work, without feeling a

* Mrs. Root suggests I have a *fashion* of getting myself into such predicaments.

bit of fatigue nor any inclination to sleep. Now, this matter of health is of such importance that I want permission to digress a little right here. On page 62, Jan. 15, I told something of my nervous troubles, and that, while working in the office, I find it necessary to visit the closet almost every hour. On this particular day I had felt no inconvenience in this direction at all, and had not thought of the closet since early in the morning. Had I been reading the letters that were at that very time piled up on my desk, I should have been thoroughly exhausted and used up, long before noon. As it was, when I came on to the beautiful streets of Akron I felt bright and fresh, except when I passed different buildings labeled "Milk Station No. 7," or No. 8, etc., and began to remember that a glass of milk would be exceedingly grateful just then. Then I remembered, too, of the years gone before, when, in going into a city, I felt a longing for a glass of beer. Oh! it was not so very many years ago, after all, since I felt that longing. When overworked mentally I feel that old craving for beer; but when riding the wheel I would rather have a glass of milk than any other beverage in the world. Of course, I don't care for milk until it comes near dinner time. When there is a little craving for food, then the thirst begins to be for milk. As I rode along I mentally thanked God again and again that all the craving I now felt for any sort of stimulant was just for milk, the nourishment that comes from God's own hand to his children. Now, friends, there is a moral right here. We overtask ourselves mentally; perhaps we bring on ourselves care and worry, and with it comes a thirst for stimulants. With an abundance of the right kind of outdoor exercise, I feel certain the natural craving will be for the *milk* and *not* for the beer.

By the time I reached the City Restaurant, on North Howard St., I was quite ready for a good meal. A tasty card hung out on the street, with its inviting legend, "Dinner is now ready—only 25 cts." After giving my order I noticed a pitcher of milk standing near; also a plate of nice-looking bread. In order to save time I took a slice of bread and a glass of milk. Oh! wasn't that bread and milk delicious! It seemed to me as if I never tasted any thing more refreshing. By the time the waiter got around with a large slice of fresh fish, just brown enough to be right, and vegetables to match, I had emptied the cream-pitcher and pretty nearly the bread-plate. It did not trouble me, however, very much, to manage also the good dinner he brought. I tried to persuade them at the desk that they should take *more* than 25 cts.; but they very pleasantly replied that 25 cts. was enough, and that, if I felt like it, I could tell my friends that they furnished *nice* dinners on very short notice, and at a very moderate price. I should have mentioned that the gentlemanly proprietor, Mr. Motz, is somewhere near the door about dinner-time; and his pleasant good nature, as he opens the door and bows customers in, has much to do with making the place attractive. How I do love to see a prompt, energetic business man look after the interests of his business! After I had finished my dinner, as there were no horses to hitch up or look after I got on my wheel and started on. There were several reasons for riding slowly. It was a very warm day, and my course east was up-hill; and after such a full dinner I thought I would ride leisurely for a mile or two. When I came to that part of the city which used to be called Middlebury I noticed another neat little card in front of a drugstore. It read, "Rest and refreshment, only 5 cents." As I was on an exploring expedition, of course I stopped to inquire. A lot of very pretty seats were fixed in front of a soda-fountain; and the proprietor dispensed ice-cream soda to his guests. After I had had a glass of delicious soda and cream, flavored with Riverside oranges, it occurred to me that I could enjoy my trip more if I were to take a little nap before going further. A boarding-house keeper next door placed a dainty little room at my disposal, in a twinkling. As it was an upstair room, he told me I could open any or all of the windows, and have just as much breeze as I chose, and sleep just as long or short as I chose. When the door was closed I could not do otherwise than drop on my knees and thank God for such a *very* pleasant vacation day as I was having. I thanked him for this our native land, so full of industry and enterprise, and so full of courteous, kind, and obliging people. I thanked him that just now, in this 19th century, it is so easy to get away from home, and find home comforts at every turn; and I felt glad to think, too, that it was my privilege to reward all these good people who seemed so willing to wait on me and do their best, and, for a very small sum of money, to furnish me all the comforts of life, including this tidy little sleeping-room, with windows almost all around; and I thanked him, too, for the blessing of sleep. Truly the words of the little text I have chosen are true. In almost less than one minute, surroundings were forgotten. I slept a delicious dreamless sleep for perhaps three-fourths of an hour. When I awoke, even before I knew where I was or how I came there, I laughed almost aloud because I felt happy.

As I came out with my wheel, an electric car loaded with passengers buzzed past the door. Forty years ago this very vicinity was a wilderness. I used to travel through here with my father, driving a gentle horse that carried a small load of stoneware. My father had a larger load ahead. Could this indeed be Middlebury? What wondrous changes! Great tall chimneys rose on every hand. Volumes of black smoke poured forth. Factories and pottery-shops were on every hand. The gravelly hills had been leveled down, and multitudes of workmen were filling the factories, tunneling into the earth for coal, iron, clay, and other minerals. I started after the electric car, thinking I would follow the crowd of well-dressed people. It swung around a hill, and pretty soon it stopped before the gate of a beautiful park. Was it a fairy scene or reality? When I used to travel through here I had never noticed any pond; but over the gateway, in large letters, I read, "Blue Pond Park." I rode up to the gateway, and asked if I could go in with my wheel. "Why, most certainly," said the gate-keeper. And all he wanted was a nickel. Once inside I took my wheel again, and enjoyed myself going around on the beautiful track made of plank that entirely surrounds Blue Pond. Up among the trees was a refreshment-stand; and a little way off was a merry-go-round, and painted boats were out on the water for those who cared to fish. I left Blue Pond Park; but almost as soon as I reached the main street a great derrick, toward a hundred feet high, rose majestically against the blue sky; and then I remembered that I had heard they struck a great reservoir of oil, not long ago, in this very vicinity. Of course, I turned my wheel toward this well which, they said, was already down 3600 feet. Why shouldn't I look up all of these wonderful things while I was out on a vacation, with no more care or worry than the butterflies that flitted from flower to flower?

Continued in our next.

OURSELVES AND OUR NEIGHBORS.

Thou hast loved righteousness and hated iniquity. —HEB. 1:9.

Mr. A. I. Root:—

I received your catalogue all right, and see that the good Lord has wonderfully blessed you. It is strange that he is so partial in dealing out his blessings. Don't you know that there are thousands of human beings that would gratefully accept such blessings if they were bestowed upon them in the way you claim they were bestowed upon you? For those same blessings there are thousands who would bow and cringe to his heart's content; yes, they would do as much of that as you ever have done or ever will do, and, like you, in God they *do* and *would* trust. But for *them*, too much of that kind of trust means "bust." It is very strange indeed that a business man like you can lay his prosperity to that mental disease commonly called the Christian religion. Will you be kind enough to satisfactorily inform me what is the matter with your God-loving and God-trusting brethren, that they are not prosperous as you are? Is your God a respecter of persons? The old scrap-book says he is not; but in the still older scrap-book they make him act like it, and acts speak louder than words, for they make him say, "Esau have I hated, and Jacob have I loved." What was there about Jacob that he loved? and what was there about Esau that he hated? If he made them both, who was to blame that Esau was not loyable? I should think the *maker* and not the *object* he made. Did he love Jacob because he was such a notorious liar and swindler, and such a good wrestler? I tell you, my friend Root, the blood-stained Christian religion is not the cause of your prosperity; but every breath you spend in sending flattery into empty space is a dead loss to you; and every effort that you have bestowed so far in defense of that old dogma has been a loss to your business. No one can tell how much more prosperous you would be if you were not cursed with that stupid mental disease that afflicts so many. I must say again, it was not blood-stained Christianity that made you honest; you deserve no more honor for being upright and honest than does the stupid, dishonest wretch deserve condemnation. A man must always act the way he is built. An independent act was never performed by any man. But I must close, and hope you will not get offended at this. I would rather have a chat with you face to face. "I was envious at the foolish when I saw the prosperity of the wicked. They are not in trouble as other men. Behold, these are the ungodly who prosper in the world; they increase in riches."—Ps. 73:3, 5, 12. According to the above, a man need not work for the church, or the kingdom of God, as you call it, in order to be prosperous. "Wherefore doth the way of the wicked prosper? Wherefore are all they happy that deal very treacherously?"—Jer. 12:1. How does this agree with your assertions? Please accept my best wishes.

Grant City, Mo. J. D. KAUFMAN.

My good friend K., if you are so embittered against the Christian religion that nothing can change your views, it would, of course, be a waste of time for me to attempt to reply; but on the other hand, if you are really seeking light and truth, I shall be very glad indeed to help you all I can. Your concluding words make me feel that the latter is at least partly true. The part of our catalogue to which you object, I have also objected to. I wrote it some years ago for our A B C book; and while it might do very well there, it seems to me hardly in place in a business catalogue. It looks too much like boasting of what I have done, or, as you put it, of how God has favored me above other people. The boys got hold of the concluding paragraph, and added it on to the history of the way our business was built up. If somebody, in looking through our catalogue, should become convinced by this little bit of history that godliness is profitable, it would be all right; I fear that some, however, have taken it as you do, although no one has ever written us except yourself, so far as I know. You say there are thousands who would "bow and cringe" providing it would bring worldly prosperity, etc. Of course, you know, dear friend, that God never wants anybody to bow and cringe for the sake of getting favors; and I hope you know, too, that neither myself nor our boys had such a thought in mind when they planned our catalogue. Yes, I agree with you that *that* sort of trusting—that is, bowing and cringing—would, as you express it, "bust up any man," and it ought to do so. If, however, you substitute, in place of bowing and cringing, "loving righteousness and hating iniquity," then the whole thing assumes a different phase. You are right in saying there are thousands of people who will beg and do a great many things—in fact, they will work hard to get money without an equivalent—but they do not succeed. What is it that God wants us to do, and how shall we please him? Our text tells the story. To make it a little plainer, let me cite the story of Joseph, in olden time. He had the right kind of trust in God. It was not of the bowing and cringing sort, by any means. His faith in God was, however, of the kind that made him hopeful and trusting, even when his brethren put him into the pit and afterward sold him down into Egypt. He must have lost faith in his own brethren, without doubt; but he did not lose faith in God. He set about doing good at the very first opportunity. He did not lament nor grumble nor complain. He took up cheerfully with misfortunes that would have staggered you or me or anybody else. Then when a great temptation was thrown in his way, instead of doing as thousands would have done, and yielding to temptation and flattery, or to the "force of circumstances and surroundings," as some would put it, he said, "Behold, my master wotteth not what is with me in the house, and he hath committed all that he hath to my hand." He said this in explanation of the fact that his master had perfect trust and confidence in him. He had been exceedingly kind in promoting him, and in trusting him with important offices. He adds further: "There is none greater in this house than I; neither hath he kept back any thing from me but thee, because thou art his wife. How, then, can I do this great wickedness, and sin against God?" Joseph was too honorable and manly, even though he *was* a handsome and accomplished youth, to be unfaithful to the sacred trust put upon him. He could not stoop to wrong his master, who had trusted him so much and depended upon him so implicitly. But more than all this—yes, far more—he recognizes the terrible *sin* and *crime* he should be committing against the great God above. Joseph was one of the heroes of olden times, who would probably have suffered death rather than dishonor the God he reverenced and looked up to. There was nothing cringing about Joseph. He was a man—every inch of him—though he was a boy in years. *God* honored his integrity; his *employer* honored his integrity when it came out to the light of day, and the whole world honors his integrity, and has done so ever since. Prisons and foul slander could not crowd Joseph down nor hide him very long. His purity and his righteousness broke through circumstances, and he rose above all his enemies. You may say that God was partial to Joseph. If you mean by this that God is partial to those who *love righteousness* and *hate iniquity*, I agree; but if you mean that God gave Joseph a better chance than he did other people, I do *not* agree. God is just and fair, or he would not be God.

I have given you one illustration of temptation and sin in the human heart; but this is only one in a thousand. Lest you fall into the mistake of thinking that I claim to be more

pure in heart than most men, I want to tell you it is not so. My life is full of giving way to temptation, more or less. Scarcely an hour passes but that I yield to sin, either in thought or in deed; and when I yield, even in thought, trouble and disaster come. When I say, as Joseph did, "How, then, can I do this wickedness, and sin against God?" and at the same time turn resolutely away from sin, the reward is sure to come, sooner or later. God blesses those who are faithful—by no manner of means those who are *cringing*, but, on the contrary, those who are manly. God expects *men* to stand up in a *manly* way, and look him in the face. The man who obeys God's commands can do this without cringing. The cringing belongs to him who is so foolish as to think he can cheat the Almighty; or to him who says in his heart, "There is no God;" or, worse still, to the man who says, "God does not see and God does not know." The latter one is apt to reason, "If I conceal this thing so no *man* sees it—so nobody sees it—then I am safe from punishment." Of all the foolishness in this world, it seems to me the latter is the most so of all.

Your quotation, "Jacob have I loved, but Esau have I hated," was no partiality at all. God loved Jacob because Jacob recognized God, and was, to a certain extent, obedient to him. Esau probably rejected God and his commands. But the expression does not so much refer to the *persons* of the men as it does to the spiritual nature of Jacob's descendants as compared with the flesh-loving world around them. The Bible does not tell us every thing. A very few brief words sometimes stand in the place of what might be the history of nations. It has been urged that Jacob was dishonest and tricky. So he was at times and to a certain extent; but for all that he probably averaged better than almost any other individual in his day; in other words, there was better timber in him than in Esau. He had some regard for God and his holy commands; and we know, too, that he repented of his wickedness. You say God made them both. So he did; but, my dear friend, God made us all free agents. He made *one* part of us, and honored us above all animated nature by leaving it within *our* hands to make the other part. An old proverb says, "Every man is the architect of his own fortune." God gave us a human life to live. He placed us between duty and inclination. He said, "Choose ye this day whom ye will serve." Every man—in fact, every child—has to make his own choice, and he deliberately and with free agency chooses. The choice is between inclination and duty; and the whole world is choosing in this way every hour and every minute. Shall it be what I *want* or what I *ought* to do? If you choose what you would *rather* do, or let *inclination* decide, you can not be one of God's children, and he has no pleasure in you. If, however, in place of inclination you choose what you *ought* to do, and walk in the path of *duty*, then you can claim all the promises in God's holy word.

It would be out of place for me to speak of my own goodness; and, in fact, there is none to speak of; but I do know this, if I know any thing: The world is full of people who are continually in trouble because they can not and *will* not consent to let duty rule, instead of inclination. There are comparatively few who will choose death rather than dishonor. But those who do—those who say, like Joseph (excuse me if I use the expression again), "How, then, can I do this great wickedness, and sin against God?" will *surely* get their reward. The whole world is clamoring for men of principle, and men who can not be bought nor bribed. Witness the terrible state of the liquor-traffic in our country, and realize, if you can, that the reason why this sin and crime can not be abated is because we can not find (or do not elect) men who are fearless and brave, and who are proof against the temptation that will surely be brought to bear upon the one who has authority. Over and over again I have had proof that God rewards even a *little* bit of faith and trust, and steady holding out against temptation. Yes, when we are faithful just a *little* he rewards us far *beyond* what we can expect. "He that is faithful in that which is least is also faithful in much." The "blood-stained Christian religion" *is* "blood-stained" because of sin. I presume your expression about sending flattery into space refers to prayer. Our proof-reader, who is taking down these notes, gave me some suggestions after reading your letter. Here is one of them:

"Christianity is accepted and taught in our colleges, where the highest order of intelligence and virtue prevails."

And, of course, our colleges teach and advise prayer to God. If the highest order of intelligence in the world accepts prayer as a real power in this world, what shall we say? Again, friend W. P. Root suggests the following:

"Mr. Kauffman's views would be cheered and accepted throughout all the haunts of vice in the world, but would be rejected by the virtuous as a class, even though the latter be not professing Christians."

My own experience corroborates this most emphatically. I do not know where you belong nor where you came from, friend K.; but I am sure that you have somehow got into bad company. There is one trouble with your reasoning—you make positive, flat assertions. Perhaps you mean to say, *in your opinion;* or, *as it looks to you;* but you must have forgotten to put it in. You say my Christianity has been a positive loss to my business. Well, dear friend, if it is indeed true that I have lost some business that I might have had, were it not for my faith that God sees and rewards and punishes, then I agree with you. I hope I speak truthfully when I say that I do not *want* any business or any thing else that God would be displeased to see me have. After dictating that last sentence I went over a brief mental review that almost frightens me. May God help me to live up to my own preaching.

Now, once more let me protest against your positive assertions. You say, "A man must always act the way he is *built*." Why, my dear friend, would you tell a lot of children, when they had just commenced going to school, that they must act out all the evil impulses that there are in them? The work of the teacher—the work of the father and mother—the work of the teachers in our Sunday-schools, and prayer-meetings, is to exhort all mankind *not* to act the way they are "built," or, if you choose, the way their selfish impulses would prompt them. A child gets mad, and is tempted to swear, as he has heard some bad men do. The kind Christian teacher says, "No, no, Johnny! Hold back the 'swear words;' look pleasant, and you will soon overcome them. Be a man. Do not be like the unreasoning brutes." A fellow in our county jail confessed to having ruined a little girl—or, at least, he *tried* to do so. I remonstrated. He said that I, perhaps, at my age, was not prepared to sympathize with young blood when they do things they ought not to. Said I, "My friend, suppose that little girl were *your own child;* then how should some other man have behaved, although temptation *were* thrown across his pathway?" He squirmed some under this hard question, for he is a married man and a father. Then he

answered me by using the very words you use. Said he, "Mr. Root, some of us are not built as you are." I replied, as I took him by the hand, "Why, God bless you, *I* was not built that way. With God's help I have been working day and night all these years to build *myself* differently." God gave me animal impulses, as he gave them to the rest of mankind; but when God did build us with our animal instincts (and they are all right and proper in their place), he at the same time, we are told, breathed into man the breath of life, and man became a living soul. Even though we *are* built with an unreasoning animal and physical nature, there is at the *same* time a God part in us. This God part says, plainer than words, "As ye would that men should do unto you, do ye even so unto them." Or, to paraphrase it a little, I would say, "As ye would that all men should treat your own daughter, even so treat ye the daughters of all men." Now, friend K., the man has never yet lived who treated other men's children in *all* respects as he would that other men should treat *his* children. With all our Christianity and all our faith in God, we are as yet too sinful to come up to this high standard. Only one, even Christ Jesus, has ever yet given us a pattern in this respect that is faultless. Our proof-reader has given me another thought—no dying Christian has ever yet rejected Christianity—at least, I never heard of such a one.

Our price list, a little unfortunately, seems to carry the idea that I have amassed *much money* because I have been exceedingly *good*. I did not mean to say any thing of that sort; but I did mean to say, and I want to keep saying it as long as I live, "Honesty *is* the best policy." I believe you have faith enough in me, friend K., to think I have tried to be honest and upright—at least, I judge so from your letter. Well, being a *Christian* is nothing more nor less than being honest and upright. I am sorry there has been, and perhaps is even now, a little of a sort of Christianity that is a good deal of profession and not very much practical work. At one time we had in our Medina County infirmary a boy who could spell every word that could be put out to him. He visited spelling-schools, and demonstrated his wonderful gift; but he could not write an intelligent letter and spell the words correctly. I have sometimes thought that there are Christians who pray, and perhaps exhort, and quote scripture texts, and yet when it comes to a business religion they are like the boy in the poorhouse. Do not be prejudiced against square manly Christians because of this kind of people. Your text from the Psalms, about the prosperity of the wicked, is simply a warning. Satan tempts us to look about the world and say that people who do not control their evil impulses at all have a better and easier time than those who fear God and keep his commandments. Very likely they do not have as much fighting to do, and they do sometimes increase in riches. The highway robber who gets away with his booty gets money faster than the man who earns it by hard day's work. Would you therefore want to be a highway robber? Your last text, from Jeremiah, is in the same line. We must not be misled nor discouraged nor stumbled because bad people *seem* to get along easier than we do; and it is true now, I suppose, as it was in old Bible times, that now and then somebody who deals "very treacherously" *seems* to be happy. But I do not want any of that kind of happiness. Dear friend K., I wish I could take you to one of our Endeavor meetings, and let you hear the testimony of some of our manly young Christians who are fighting against temptation. I think you would soon conclude that people who are "not built that way" may be, by the grace of God, "built" over.

Another thought about this matter of "acting as one is built." Jesus said to Nicodemus, "Ye must be born again." I think that was his meaning. Why, if I should always act the way I am built, I fear I should be the worst man you ever knew or heard of. God forbid! Now, do not be in haste to lay this bad feeling to God's part. The *building* was done by *myself* (not by God) in earlier years, when I yielded to temptation. Yes, I once thought, or *tried* to persuade myself, and I fear others too, there was not any God whose all-seeing eye took in every wicked and wrongful act. The man who proposes to always act as he is built is hopeless; that is, if you mean by the expression "built" one who proposes to follow his low and selfish desires. Why, the whole Christian religion is based and founded on holding in subjection these inherited passions of ours. No man can think of being a Christian unless he exercises self-restraint and self-sacrifice for the good of others. And this is exactly what the Savior meant when he said, "If any man will come after me, let him *deny* himself, and take up his cross, and follow me."

HOW DID EVIL COME INTO THE WORLD?

Since the above was in type, the following letter, much in the same line, is at hand:

Dear Brother Root:—The excellent lecture you give under the title of Ourselves and our Neighbors, in GLEANINGS of June 1, is certainly one of great merit; put in practice it would increase the happiness of a majority of families. But I take exception to the use you make of one or two words; viz., *Satan* and *Devil*. I should like to know what you mean by those words. It seems that you hold that there is in the world a being invisible, independent, self-existent, ever present, and ever in opposition to all good. Where did this Devil come from? You know the Bible tells us that God made every thing that was made, and saw that it was good. Now, then, if that is true, God made your Satan, or Devil, and he was a good Devil. Milton's "Paradise Lost" inculcates the doctrine of a fallen angel, based upon a misunderstanding of the Scriptures, and has made more infidels than all the infidel writers put together, though it is prized as a Sunday-school book by some people. I should like to hear from you on this subject. R. H. RANDALL.

Big Rock, Ia.

You are right, friend R.; and I agree with you that God did make the Devil, or Satan. As you say, he was, when God made him, a good devil, or, rather, a good being, and not a devil at all. God made him good, and he made himself bad, just as you and I make ourselves bad if we choose. In other words, the Devil himself made himself just what he is. You may ask why God created us with a possibility of our being devils instead of angels. He made us intelligent, reasoning beings; and as such we have the power to choose. The more intelligence one has, the more wicked he can be if he chooses to be wicked. When our parents or teachers give us a high degree of education, they do it knowing that this education without godliness or principle will enable us to do more harm in the world than if we were left in ignorance. Satan was endowed with a very high degree of intelligence, judging from an acquaintance of many years; and I am sorry to say that he has been, most of the time, nearer than a next-door neighbor, especially since I have been trying to "love righteousness and hate iniquity." I should give him credit for intelligence beyond any thing human. His ways of working, his wiles, his schemes, and subtilty, are at times beyond any thing else in the universe.

I confess that I do not agree with many peo-

ple in their estimate of Milton's Paradise Lost; but I never knew that any body of Christian people considered its influence any thing at all like the influence of a Sunday-school book. I never found it in a Sunday-school library, and I should consider it out of place there; yet, my dear friend, does it not depend much upon the way in which we use the book? If we read it loving righteousness and hating iniquity, we may find many good lessons in it; if, however, it is iniquity that we are after, and not righteousness, then Paradise Lost would be a bad book. It had better be kept on an upper shelf, or not kept at all. All we know of Satan, or the prince of darkness, is what we derive from the Bible—that is, as to whether he has an existence as an invisible being, etc. It seems to me that the Bible plainly teaches this. If to others, however, it means only an evil impulse, I do not know that there can be any serious objection. The moral is just the same. We are to fight evil impulses and evil suggestions. We are to put down inclination, and let duty and wisdom take its place; or, as we have it in Holy Writ, "Resist the Devil, and he will flee from you."

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

GARDENING IN JUNE.

Dear me! what a topic to talk about! Every thing now is under high pressure. We have been selling the American Pearl onions for about a week. As this is the third season they have wintered successfully in our locality, we must call it a success. More than that, several have succeded in wintering over the onions from seed sown in August. A neighbor sowed quite a lot of seed about the 15th of last August; and a few days ago he showed me the handsomest onion-plants I believe I ever saw. They were about the size of a slate-pencil, and had little bulbs about as large as beans. In fact, they were ahead of any thing I had raised with much labor and pains from seed sown in the greenhouse in January. There is this about it, however—he did not have plants ready to set out as early in the season as I did. The wintering seems to give the onion a pretty severe setback, and it is only until quite late in the spring that it recovers sufficiently so as to have vigor and vitality enough to stand transplanting. As this season, however, has been a remarkably late one, very likely he would usually have to transplant along in April and May instead of May and June, as they have been this year. The winter onions are all right before the American Pearl comes on the market; after the latter, however, are to be had, no one would take the Egyptian or winter onion hardly as a gift. These latter get to be tough and woody after they have sent up seed-stalks. We have just tried some of the American Pearl for cooking, and they make a very savory dish for one who likes cooked onions, even if the greater part of the stalk be used also. Of course, none of them have yet made a ripened bulb, although we have some onions as large as the top of a coffee-cup; and, by the way, this thick fleshy stalk is getting to be a serious trouble with onions in general, especially with the Prizetaker. With the great demand there is for the seed, I fear nobody has the courage to pick out only onions for seed having a very small top, or no top at all, when they are cured. There is an onion farm near us where they raise 100,000 bushels of onions a year. Their foreman told me that a prominent seedsman had been there trying to buy some seed. Their seed was all grown for their own use, from choice selected onions, out of their thousands of bushels. When he found he could not buy any seed of them at all, he told them that such seed as they had grown for their own use was worth $5.00 a pound to anybody who grows onions. Well, some of us have been paying $5.00 a pound for the seed, and have not got seed worth it even then. A year ago I selected from the Cleveland market some of the finest specimens of Spanish onions that could be had, without regard to price. They weighed one or two pounds, and they had nothing but a little dried-up stalk, scarcely visible. I succeeded in raising only about a quarter of a pound of seed from these great bulbs. We have now several thousand plants, but, like the onion-farm folks, they are not for sale. In fact, I am not *sure* yet that they are worth more than the onion-plants that we do sell; but I tell you, I am watching them with a great deal of anxiety. If they produce large onions (without being double, and without sending up seed-stalks), just like the big ones the seed came from, they would be worth to me $10.00 a pound, and may be $25.00. I wonder whether the experiment stations have done any thing in the way of raising Pedigree onion-seed—the model of what we want to grow is in our market at almost every season of the year. Where are they grown, and how do they do it? Will somebody tell us? They are good keepers, because we have had them for months during almost all kinds of weather. By the way, our American Pearls annoy us by sending up seed-stalks. Gregory and some other writers tell us that, if we break off the seed-stalks, they will make just as good onions. It is not true. If we break off the seed-stalk they will send up another, and they will get strong and tough. They are as contrary about it as a hen that wants to sit. Another trouble with many of our onions from choice seed, is, that they have become tinctured somewhat with the *multiplier* onions. If you won't let them send up seed-stalks they will go to doubling up, and pretty soon you will have two onions instead of one—sometimes three or four. The best seed that is offered for sale does this more or less. If my choice seed proves to be free from all these freaks and vagaries, won't it be an acquisition? It will, however, cost something to go on the market and buy onions that weigh a pound or more, pay two or three dollars a bushel, and then succeed in getting only one or two heads of seed from each great big onion. By the way, some good friend said in one of the agricultural papers, that he wished A. I. Root would give the world a strain of onions that would not make it necessary to go off in the woods to work all the rest of the afternoon after one has had them for dinner. Thank you for your confidence, good friend; but I believe I would work harder for a strain that would not send up seed-stalks, or commence doubling up when you simply wanted one nice smooth round bulb.

STRAWBERRIES.

We are getting nice large berries again from Marietta, O., 110 miles further south than where we live. But almost as soon as these berries came, our one row of Michell's Early began giving us nice fruit, well colored, good shape, and of excellent flavor. We have had Michell's Early on probation three years, and this is the first time it has not been injured more or less by frost. This year it blossomed fairly, and not a bit of frost has troubled us. Just as soon as we made our first picking I went at it and planted a row 40 rods long. Its yield of fruit is not to be compared with the Haverlands, of course; but

I think it will give us as many berries as the Gandy and some others regarded as a fair yield.

We have had fair celery on the market for a couple of weeks; but now, alas! it has gone up to seed, and we shall not have any more for a month or six weeks.

Lettuce has brought 30 cts. per lb., ever since the first of January, until the first week in June. The demand has been all this time beyond the supply. Just you see if I don't do better next time.

We have been having peas right along in small quantites, from that experiment bed in the greenhouse; and now we have peas almost ready to pick, from several rows sown in March. It does pay to plant peas during very unfavorable weather, early in the spring, even if you have to push them down into the mud. Sow them very close in the row, and they will generate heat and force, or something else, enough so they will start and grow, when it is difficult for any thing else to make any progress.

For the first time we are growing potatoes on clover sod, exactly after friend Terry's "prescription." The ground is the nicest to work of any thing I have ever seen on our stiff clay soil The small-tooth cultivators and the Breed's weeder work to perfection. I think we are going to have some Terry *potatoes* this year.

The bugs have commenced work on our Hubbard squashes, cucumbers, and melons. We have covered the plants with tobacco, and the bugs have pretty nearly given up the job; but on some hills, where they had got a good start, it seems to be somewhat of a question. Occasionally we *assist* the tobacco, by pinching the bugs between the thumb and finger. No matter what you use, it seems to have a good effect to have the *boss* come around occasionally and give the bugs to understand that somebody who is interested in their destruction has an eye on the way things are going.

A month ago we had more tomato-plants than we supposed anybody would ever want; and as they were getting long-legged in the greenhouses and plant-beds, we planted them out, giving them more room, hoping somebody would appreciate our great big stout plants enough to pay double price ($1.50 per 100) for them, and we have not been disappointed. By the first of June, after people had finally got their gardens plowed and ready, they began coming for those big tomato-plants, some of them with blossoms on; and after the community got educated to it, that it was better to pay a cent and a half apiece for great big nice plants, with strong bushy roots, we were sold out. People kept coming, and wanting more of those great big nice ones; and when we told them all we had left were those *once* transplanted, at 10 cts. a dozen, they went off and would not have any; and yet when we first started, people went away offended because we would not give them the best plants in the whole garden for less than 20 cts. a dozen. There is a good point right here. When you have something that is extra nice, even if folks do say at first they won't pay it, they are very likely to come back afterward, when they find they can not do any better. This makes me think of the man who thought I was wicked for charging so much for the American Pearl onions. Until this week we have been getting a nickel for a half-pound bunch, or, in other words, 10 cts. per lb. for onions, *top and all.* That would be about $5.00 a bushel; and when you take into consideration the fact that the top weighs fully as much as the bulb itself, you see we got about *ten dollars* a bushel for these nice-looking onions. If some of our customers who are buying these right along should see this, they might be offended. But look here, friends. Although I have raised them right along for three years, nobody else in our neighborhood has enterprise enough to go to work and undersell me. Another thing, you must have a good price for taking any crop out of the ground when it is only one-fourth grown. In other words, we shall, perhaps, get as much money by letting them grow into big onions for $2.50 a bushel, as to pull them now and get $10.00. If you are going to pull them for bunch onions, you want to put them in almost too thick for a regular crop, and have a great lot of them, then thin them out when they are as large as walnuts or hen's eggs.

CURRANT-WORMS, SQUASH-BUGS, POTATO-BEETLES, ETC.

This year we had a good deal of trouble in heading off the currant-worm with hellebore until we discovered that it had lost its virtue by being too old. We bought it at our drugstore, but noticed that, instead of being a soft powder, it was in hard lumps. After it is so old as to be in lumps, it is of little or no use. As no good hellebore was near when we found out what the trouble was, we used pyrethrum instead. Now, this costs only a little more per pound than hellebore—probably not any more if bought in quantities; and I feel certain that a little pyrethrum goes a good deal further than hellebore. At the first trial it completely banished every trace of the worm; and although ten days have passed since that one application, not another worm has been discovered. We pay at our drugstore 40 cents per lb. for hellebore, and we are now able to sell pyrethrum, right fresh from the California growers, at the same price, or 10 lbs. for $3.25. As we buy tobacco dust by the ton, we can sell it in 100-lb. lots for $1.75. If you take a whole case of 400 lbs., we can make the price $1.50 per 100 lbs. As it is very light and dry, a pound makes quite a big lot. Where the bugs are very bad, we sometimes use ¼ lb. to a large hill of Hubbard squashes. We are handling squash-bugs with this tobacco dust as we did last year. And then you want to keep a little watch also. We like it better than the wire protectors, because we have nothing to pick up and get out of the way after the bugs are gone. We handle potato-beetles on the old plan, still adhered to by T. B. Terry. Just as soon as our potatoes were up, two boys went over the patch and found all together about a pint of bugs. Four days later they made another careful examination, and found, perhaps, one-fourth as many. A few days after that I looked over our fields and did not find a bug. The success of this kind of picking, like many other things, consists in taking a stitch in time. Get the mother-bugs just as soon as they move in, keep watching for them, and be ready to catch them when they first arrive, and you will easily keep the upper hand.

A WONDERFUL NEW PEACH.

At least, it was wonderful to *us.* The samples came by mail something like a year ago, and I made no mention of them then because I was watching for some later explanation. If it ever came it never reached my hands. The package came from somewhere in the South. The queer thing about the peaches was that they were flat like a tomato; in fact, one would hardly know what to call them, as the shape was so unusual, were it not for the beautiful peachy bloom with the attendant down, etc.; and when we came to sample them it seems to me they were the most luscious peaches I ever tasted. I can readily imagine such fruit should

sell for ten cents, or, say, three for a quarter. They were packed in some beautiful fine moss, in a pasteboard box, the package setting them off to excellent advantage. Will somebody tell us the name of this beautiful peach, and something about its cultivation? and will the donor please accept our thanks, even if we are so tardy in mentioning it?

STRAWBERRIES—LATER.

One shipment from Marietta failed. Michel's Early did not yield enough to supply the demand, and there was a "corner" in strawberries. It was Monday afternoon. They were all sold out in the lunch-room, and one of the clerks asked if I could not get a few more, even if they were not real ripe. The pickers had been all over the grounds in the forenoon, and had picked every thing they thought would do to sell. I said I would go and get some that were ripe on one side, and perhaps our customers would rather have these than none at all. As I rode along the path on my wheel I got glimpses of some bright-red berries through the dark-green foliage of some young plants that stood almost knee-high. Friend Terry once spoke about having strawberry-leaves large enough so a single one would cover the top of a teacup. Well, we could show some leaves this spring a good deal larger than that. I sprang from the wheel and found a berry on the very first plant in the row, that looked more like a peach than it did a strawberry. The plants were put out last fall, two feet apart, and they made but few runners; but each plant had in consequence got to be something immense. At the next plant I found another like a small peach. Pretty soon my hands were full. I called to a boy to bring me some boxes; and while I filled them I began to speculate as to what those plants were. Said I to myself, "Why, this must be the Edgar Queen; and if this is the way it behaves I will just go and plant acres of it." Then I felt pretty certain that we did not put any of the Edgar Queen on that part of the grounds. What could that wonderful plant be? It was not Parker Earle, because the latter is a late berry, and this particular one was not more than three or four days later than Michel's Early: it must be a wonderful acquisition. Twenty rods ahead was a stake with a label, but I could not read it so far off. I decided I would pick berries until I reached the stake; and as I filled box after box with the great beauties, my enthusiasm ran up to fever heat. Said I again, "Why, I never heard of any *early* strawberry that gives such wonderful great fruit as this, before. The Haverland, Jessie, and other early varieties have hardly commenced to ripen. What can it be?" When I reached the stake I said, "Why, you old stupid, you might have known that the rich dark-green color of these great broad leaves belongs to no other plant in the world than to the Bubach. Three cheers for the Bubach in its perfection!" How does it come that we have had Bubach all these years, and have not found out before what it can do? Well, I will tell you. Almost ever since we have had the Bubach the weather has been overwet. They rotted before they got ripe, or were too soft and watery in taste. Just now we are having a little bit of drouth, and the Bubach has for the first time come to the front. Another thing, these plants were growing on a strip of creek-bottom ground that has been dosed and dosed with manure until everybody said I could never get my money back. Let me tell you something. Strawberries were selling up town for 12 cts. a quart. Our own brought 15, because they were picked only as fast as customers wanted them. I put these great big Bubachs in pint boxes, and marked them 10 cts. a box, and they were all gone in no time. Folks bought them as curiosities to show to their friends; and after they had taken a bite or two out of one of those great big berries they found the quality so delicious under the influence of this clear hot sun from 4 in the morning till 7 in the afternoon (am I putting in too *much* sunshine?) that they just came back and wanted more of that new kind of strawberry "as big as peaches;" and while I write this, we are picking and selling more like them at 10 cts. a pint. We are now going in with more enthusiasm than ever before to raise some Bubach *plants* that will astonish some of our friends who get them, as the *berries* astonished the Medina folks.

Moral—Old friends are sometimes equal to or better than new ones, if you wait long enough and give them a fair chance.

We copy the following from the *Practical Farmer*, of June 3:

The Freeman stands at the head in the matter of quality. As to size, it is owing to how you plant them. I have grown them altogether too large, by planting one eye every 32 inches each way, on rich soil. Seed heavy, and they will average small. One-eye pieces 12 inches by 32, last year, gave us a crop of fair size. But this year we have planted about 16x32, and hope we have them about right. The Freeman, and all other potatoes of the Snowflake class that I have tried, produce a good many small, unmerchantable tubers. This is the only fault I have found with it. With thin seeding, however, this trouble is greatly reduced. The complaint has been made that they grow too wide-spread in the hill. This is not the case with us. The Hoover digger gets them all; that is all I care. Some have spoken of them as very early. With me they are only medium early. The truth is good enough; no need of claiming more for them than they will back up. In shape, looks, and quality, they are perfect. The vigor of growth and productiveness with me for two years past has been such that I have planted nothing else this season, except a half-bushel of a new variety. T. B. TERRY.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.
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36 PAGES 7×10
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And the Lord said, Simon, Simon, behold, Satan hath desired to have you, that he may sift you as wheat.—LUKE 22:31.

SEE additional editorial on page 496.

MANY reports are now coming in, something to this effect: "Every thing seems to indicate a big honey crop this summer."

The only queen-breeder in this country who has been holding on to the Punic bees, seems, from present indications, to be rather getting out of the business, and confining his attention to more desirable race of bees. 'Tis well.

ONE conspicuous feature of the *American Apiculturist* is the large amount of editorial work in it. Taking the editorials as a whole, they are good. It is true, they are a little tinctured in the interest of his queen trade and queen-trap; but we are all more or less culpable in a similar way.

THE *British Bee Journal* for May 25 is just at hand, and says the long drouth has at length come to an end, and that the parched ground in all parts has been refreshed with welcome show-

ers. It seems that, during the past month, the bees have been working in supers as they ordinarily do in June; and that, taking it all in all, there has been such early summer weather as has not prevailed for many a year. We learn, also, that the drouth and heat have been such that the cattle have been dying in some parts of Europe; and in other parts snow-storms have prevailed to such an extent as to cause immense damage; that plagues of locusts have infested Algeria, destroying the crops for miles around. The prospects, both for England and Ireland, have never been brighter. That our friends across the water may be blessed with a big crop of honey is the wish of all the cousins on this side of the big pond.

LOCUST-TREES, so far as we can judge from reports, and from what we notice of those in our own locality, have been doing unusually well this season. White clover is following up the locusts very closely. The prospects for a crop of honey were never better; and although the seasons have been discouraging of late, bee-keepers should not fail to see that their bees are in good order—strong, and ready for honey when it does come. Indeed, it is already on the way. The conditions of weather during the past few weeks have never been more favorable. It would be a sad comment on bee-keepers, if they should have an extraordinary season this year—if they were to let the nectar go to waste, simply for want of bees, or from a lack of enterprise to get the bees in order to secure it. We presume that, ere this number is out, in many portions of the North the bees will be actively at work. Hold your tin pans up to catch the honey-shower when it comes; and look out for the basswood-blossoms, as mentioned by Doolittle in another column.

IN the *Bee-keepers' Review*, page 186, we find the following, from the pen of E. E. Hasty, under the heading of a "Condensed View of Current Bee-writings:"

The world moves, GLEANINGS included. When Weed was at artificial-comb making it preserved a silence that could be cut into chunks with a knife. I think the *Review* was about the only journal that frankly told right out all it could get hold of to tell.

Elsewhere the editor says, editorially, that "GLEANINGS did eventually describe and notice the Weed artificial comb." When we first read these lines over we were at a loss to know what was meant by these quotations, as we were sure we had fully described the Weed artificial comb. No doubt our item on page 297 is referred to. As this form was going to press, we had time to look up only one reference. If Bro. Hasty will put on his specs, and turn to page 824 of GLEANINGS for 1889, he will find a full account of the early experiments in making artificial comb, and all about how it was made by Mr. Weed. In fact, the senior editor made a trip to the factory, in Detroit, Mich. Later on we made other allusions to and have experimented with it carefully in our apiary, but could not make the bees take it. As to why we should "preserve a silence that could be cut into chunks with a knife" on this question, even if it were true, is a little hard for us to understand. We have had neither desire nor object in suppressing information relative to such comb.

IN this issue the Rambler gives a very interesting fact in regard to the white-sage blossoms, and how the bee manages to abstract the nectar that the blossom seems loath to give up. We have recorded in the A B C how Italians would break through the flower-stem to get the nectar of the touch-me-not; but here is another way in which the bee seems to overcome any obstruction that nature may afford. The question may be asked, Why is it that the white sage is jealous of her treasures, as expressed by Rambler? Is it that she desires to give her treasured sweet only to that most intelligent of all insects, the bee, or that she would if she could hold them all to herself? Who of our readers can give us some light on this interesting question? Perhaps Prof. Cook can come to our rescue as he has done so many times before.

Oh, yes! the Rambler has directed us to another interesting fact; viz., that the sheep industry come into direct conflict with that of the bees. Sheep are close grazers, and it is no wonder that 5000 of them in a good bee country are unwelcome to the bee-keeper.

PERCENTAGE OF WINTER LOSSES THROUGHOUT THE UNITED STATES.

ON page 404 of our issue for May 15 we called for reports as to how the bees had wintered. The first question was this: What percentage of your bees have wintered? and the second, What percentage of the bees in your locality, as nearly as you can estimate, have wintered? By summing up all the reports that have been received within the two weeks just past, we find the total aggregate is 77 per cent to Qu. 1; for No. 2, the per cent is only 57. This is much better than we expected it would be, as it seems the losses were not as heavy as the reports seemed to indicate early in the season. The greatest mortality seems to have been in New York, Indiana, Wisconsin, Illinois, Ohio, and Michigan, in the order named. Throughout the whole South there seems to have been, as usual, but little if any loss, and that only from starvation. The reports were not as numerous as we could have desired, yet they are sufficiently so to give us a very fair idea of the condition of bees throughout the country. Dear, dear, dear! the Home of the Honey-bees seems to be at the bottom of the whole ladder. One thing we have determined upon is this: Never unite again so late in the fall a lot of nuclei. We believe it was friend Alley (and perhaps he was not very far from right) who said it was about as cheap to throw the few bees into the grass. That seems cruel, but perhaps not more so than to let them pine away one by one with dysentery during the subsequent winter and spring. Queen-rearing can not be pursued profitably so late in the season in the North, as our experience showed.

HAS THE SELF-HIVER HAD ITS DAY?

THE editors of the *Review* and the *Apiculturist* take the ground that the self-hiver has had its day. They may be right; but we are not quite willing yet to let go of something that worked practically in our apiary with much satisfaction last summer. Alley has never tried the Pratt self-hiver, if we are correct; and having tested his own quite thoroughly he has abandoned it. By the way, editor Alley rather scores Pratt for switching from one hiver to another. Folks who live in glass houses should not throw stones. If any one has switched from one hiver to another, it has been Mr. Alley.

If the non-swarming devices are *actually* non-swarming, they will be preferable to any automatic hiver ever made. But, right here, does not the chief objection urged against the Pratt hiver, to the effect that it requires the lifting of heavy supers, obtain equal force against the Langdon non-swarming system? Let us not urge that lifting is an insurmountable objection when there is necessarily a large amount of that sort of work in the apiary. We

do not believe that bee-keeping will ever be gotten off the plane where *all* lifting will be eliminated. The only way to get at any brood-nest for any purpose, having supers filled with honey on top, is to *lift* or slide the supers.

THE JUNIOR EDITOR ON ANOTHER BICYCLE-TOUR; HE DISCOVERS A BEE-MAN WHO ALWAYS GETS THE HONEY.

Did you ever! For the past six or seven years there has lived one of the most progressive, intelligent, and *successful* bee-keepers in the United States, within four miles of the Home of the Honey-bees, and *we* didn't know it. We had noticed that large amounts of fine honey would come in from York, but thought nothing particular about it. Observing one day that the boss packer, Jake, was putting up a lot of goods for a York man, we became interested, and asked to see him when next he came. We finally had the pleasure of meeting him last week. He kindly invited us to come down and see his bees that day, which we did toward evening. We mounted our trusty steed, the wheel, and in a few minutes more beheld one of the neatest and prettiest apiaries in all the country.

A year or so ago, when we went by on the bicycle, on that 400-mile trip, to hunt up and gather all the pointers we could from prominent bee-keepers, we little realized, as we passed, that we were leaving behind us a bee-keeper who is not less progressive than those we intended to visit, hundreds of miles away. On the present occasion, as we were standing at the apiary we felt considerably chagrined to find that we had all this time never known more about this man and his success. We did not have to wait long before the owner, Mr. Vernon Burt, came out; and as we were short of bees at Medina, we desired to look over his, to see what we could buy. We remarked that we were using only Hoffman frames, and so we did not care for combs; all we desired was the bees and brood, and old crooked combs would answer our purpose, because the bees and brood would soon be transferred into frames of more modern construction. There were something over 100 colonies, and every one that we examined was fairly boiling over in strength. The bees were beautifully marked, and even at that time were strong enough to be in good working condition for honey. But, not satisfied with it, Mr. Burt was encouraging them all he possibly could to get a large force of bees of the right age to work on clover and basswood later on. He uses almost exclusively, chaff hives—our old two-story and the old Simplicity one-story. He has nearly as many of the latter as of the former; and, as between the two, the results in wintering compared as favorably in one as in the other. We asked him whether he discovered any slight difference in favor of the large two-story chaff hive.

Not a particle, and what was more, the one-story hives were very much handier. All things considered, he very much preferred them. During the past unusually severe winter, when everybody in our locality lost so heavily, he lost only two colonies out of 110 or 115—the exact number we do not now remember. Very cautiously we ventured the question:

"Did—did—did you use any sealed covers?"

He gave us a sly twinkle, and said, "Not a one. I was entirely satisfied with the old way—using a large absorbing cushion. I secured good results, and I did not know why I should not do so again." And with a smile he added: "I thought you would abandon that sealed cover later on."

We tried to tell him that the only way that we could know a thing is to test it practically.

"That is all right," said he; "but I prefer to let the other fellows do the testing."

We finally made him an offer on the bees for the number that we would take. He hesitated a little bit, and we noticed that he was disinclined to accept our offer. We finally said to him, "Your colonies are in No. 1 condition, beautifully marked, boiling over in strength, and on perfectly straight wired combs; and, to tell the truth, we would not sell them if we were in your place. But we could not make the price any more, as we could buy colonies on crooked combs that would answer our purpose just as well, for less money."

"Yes," said he, "my net profits on every one of my colonies have been more, and I think I prefer to take my chances on a honey crop."

It seems Mr. Burt has, during all these poor seasons, made his bees pay well; and while many of his neighbors have been dropping out he has been steadily and surely increasing his stock and getting his crops of honey. He has a small farm that he runs in connection with his bees; but the major part of his time is devoted to his pets, because he finds more money in them.

SHEEP AS LAWN-MOWERS IN THE APIARY.

As we were walking through the apiary we noticed the grass was kept down, perhaps not so nicely and evenly as a lawn-mower would do it, but well enough to answer all practical requirements of the apiary.

"You do not dare to turn stock in here, do you?" said we.

"No," said he; "I let loose a flock of sheep."

"Only at night," we interposed.

"No," said he; "it makes but little difference whether it is night or day. The sheep are seldom molested, and they will eat the grass clear up to the entrances. And even if the bees do sting, they can not hurt them very much, on account of their great woolly coverings." The only time he had ever seen any commotion among the sheep was when one of them "got pecked in the nose." But that was rare.

That evening, when we got home and saw the long grass among our hives (it is all nicely mowed out now) we thought how nice it would be to have some sheep that would keep the grass down "automatically" and without the help of any extra man.

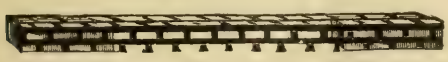
This method of keeping down the grass in the apiary by means of sheep is certainly a good one. We have seen the idea advanced a number of times before, but never had a chance to witness how nicely they do the work, and at practically no expense—nay, rather at a slight net profit, because the grass is converted into wool and mutton. Here is one case, at least, where sheep and bees go well together. But in California the thing seems to be reversed; or, rather, to put it more exactly, a few sheep in an apiary are an advantage; but when the bee-pasturage is encumbered with 5000 it is a little too much of a good thing. Our stenographer suggests that the difference is here: In California the sheep and bees are dependent on the *same plant* for a living; hence the sheep can very soon destroy all prospects of a honey crop; but here the sheep eat the grass and let the bees have the basswood and clover.

We have made arrangements with Mr. Burt to make for us a number of experiments, as he is so close at hand, to test, among other things, the Pratt automatic hiver and the Langdon non-swarmer. He is in position to test practically a number of things that we could not do here. Later on we will give you a picture of his handsome apiary, and, if possible, will try to make the camera show how nicely the sheep keep down the grass.

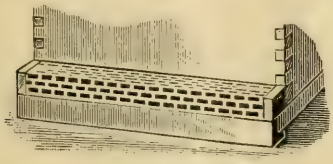
TRADE NOTES.

BEE-ENTRANCE GUARDS.

Along last summer, when we had hybrid colonies in the apiary, we had occasion to use quite a few drone-guards over the entrances, to keep in any undesirable drones that might be among the bees. The guards we used were like those shown in the accompanying cut; but



we soon discovered that they did not afford sufficient ventilation, and, as a consequence, on warm days the bees clustered out. Observing this, we instructed one of our workmen to make a few guards having twice the number of holes, or double the entrance capacity, of the other guard. These we put in place of the smaller guards, and were surprised to notice how much better the bees kept in the hives. The subjoined engraving shows that it reaches the full



length of the hive—is wide enough to take up the surplus of the bottom-board projecting in front of the hive, and deep enough to take in three rows of perforations. If put on the other way up, there will be a little of the alighting-board projecting.

In the case of some of our colonies of doubtful purity we kept these guards on throughout the season. Indeed, many of them were left on over winter, so that many of the colonies hardly know what it is to be without the guards. Occasionally, when a few drones accumulate by getting hung with their heads in the holes, we remove the guards, and, with a sharp stick, scrape off the surface of the zinc. This rubs off the heads like a lot of buttons, freeing the zinc, after which the guards are replaced as before.

Such guards are an absolute necessity in queen-rearing apiaries, or in apiaries where it is desired to rear queens from choice mothers of the honey strain. And then, too, they will prevent the escape of runaway swarms, accomplishing the same purpose as clipping queens' wings, without the attendant danger of the clipped queens becoming lost by crawling in the grass, in the hopeless effort of following the bees.

POSITION OF THE SMOKER BELLOWS.

When we decided upon the details of the Crane smoker, there was no uncertainty as to which position the bellows should occupy; i. e., whether the large end should point toward the cone, or *vice versa*. From some experiments that we had made, we were decidedly of the opinion that it was better to have the large end upward, or pointing toward the cone, *providing* the stream of smoke was suppesed to be delivered at right angles to the cylinder of the fire cup. With the old-fashioned straight cone, it is probably better to keep the bellows the old way.

When we reversed the position of the bellows, we wondered that friend Bingham did not see the point and fall in line, particularly as he had recently put on a detachable nozzle, to turn the

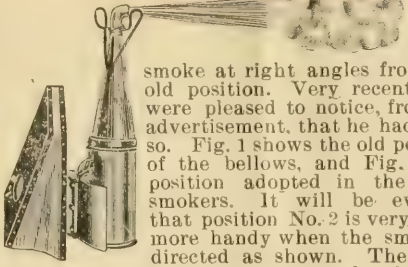


FIG. 1.

smoke at right angles from the old position. Very recently we were pleased to notice, from his advertisement, that he had done so. Fig. 1 shows the old position of the bellows, and Fig. 2 the position adopted in the later smokers. It will be evident, that position No. 2 is very much more handy when the smoke is directed as shown. The hand has more leverage, for the very

FIG. 2.

reason that it is pressing on the smoker-boards at the point of the greatest leverage; whereas, by the old way the hand has to press the bellows-boards at the point of the least advantage. We do not claim that friend Bingham was copying after us; indeed, this plan was first brought extensively into practice by A. J. Hill. Recently a writer in the *Bee-keepers' Review* for February, page 37, demonstrated clearly the advantage of having the large end of the bellows pointing toward the cone, when said cone has a curve in it so as to deflect the smoke at right angles. As we were then working on the Crane smoker, preparatory to putting it on the market, we very quickly saw the point, and, as a consequence, every Crane smoker has gone out with the curved nozzles. It may be proper to remark, however, that those who prefer the old straight nozzle, with the original position of the bellows, can be accommodated without extra charge.

CLEATING SMOKER-BOARDS FOR SMOKERS.

The first dozen or so of bellows of the Crane smoker that we made had uncleated boards. Noticing the disposition on their part to warp occasionally on such a size of bellows, we very soon had the *ends* of the smoker-boards rabbeted out one-half the thickness and ⅞ inch wide. In this was glued a cleat ¼ inch thick and ⅞ wide. Any disposition to warp now is effectually prevented.

THE CRANE VERSUS THE CORNEIL SMOKER.

In speaking of the relative merits of the check-valve blast and the blast of the Corneil smoker, it will be remembered that we were to send to Mr. Corneil himself one of our very late Crane smokers. He has kindly acknowledged the receipt of it, and promises to conduct some experiments again. We may, therefore, look for interesting results further on. But let it be understood that we want the Crane smoker to stand entirely on its own bottom. From the tests we have made, we firmly believe that the principle of the Crane secures a stronger blast than that of the Corneil. But as we are all liable to make mistakes, especially when self-interest comes in, we shall take special pleasure in reading what Mr. Corneil discovers regarding the relative merits of the two smokers placed on an equal basis.

My hive came the 20th. I think the workmanship is complete. I like it very much. I have put all together that I have. HERMAN LOOMIS.
Salisbury, N. Y., May 31.

ADDITIONAL EDITORIAL.

ACCORDING to the experiments of the editor of *Bee-keepers' Review*, and J. E. Crane, the Crane smoker seems to be rather ahead for strength of blast; but, as we say elsewhere, we are waiting anxiously for the result of the experiments made by Mr. Corneil himself.

BE sure to read the review of those old bee-books, on page 476. It can hardly be said to be *written* here or anywhere else, for the author sets the type himself, mostly without copy, except the extracts. We believe it will be found to be of interest to all who like to know how our forefathers managed bees.

As announced in our last issue, the Russian translation of Mr. Ed. Bertrand's bee-book, "Management of the Apiary," is at hand. It is handsomely printed, and we are glad that the millions of those who speak Russian can now have this work in their own tongue. This is the fourth language in which the book has been printed.

SINCE giving the "write-up" under Trade Notes, of the new Bingham smoker with the reversed bellows, we have received a sample. It is indeed a nice one, and we are sure the change will please, as all of the Binghams have done in the past. Indeed, there is hardly one thing that is used in the apiary that has built up a better reputation for satisfactory working, during the last decade, than the Bingham smoker.

THE following letter from R. C. Aikin, of Aikin Bros. & Knight, will explain itself:

Mr. Root:—The write-up of the K. D. hive does quite well. Please correct one error that is important. Mr. Knight has *not* used the non-swarming plan, but has used the top entrance two seasons.

R. C. AIKIN, Loveland, Col.

We accept the correction. It seems, therefore, that H. P. Langdon not only enjoys priority in method, but in the *principle*, of preventing swarms.

THE June number of the *Progressive Bee-keeper* is an unusually good one. Although the new editor is a comparatively new man at the bee-journal business, his general selection of writers, and subject-matter, including the editorial, would do credit to an old veteran. The article entitled "Wayside Fragments," by Somnambulist, is especially interesting; and we have been trying to guess who the dreamer is. Some of his sentences smack a little of Hasty; others of Dr. Miller; and others do not sound like either or any one else. Another feature of the journal is a supplement in German—a feature that will be appreciated by those from the "Vaterland." We can club the *Progressive Bee-keeper* with GLEANINGS for $1.30.

MICHIGAN bee-keepers have been fortunate enough, through the editor of the *Bee-keepers' Review*, the Hon. R. L. Taylor, Hon. G. E. Hilton, and others, to secure an "appropriation of $500 a year for paying a man to conduct experiments in apiculture;" and the Hon. R. L. Taylor, of Lapeer, has been appointed to do the work. The *Review* goes on to add that "he has had experience; he is careful, methodical, and conscientious; and it is no disparagement to other bee-keepers to say that probably no better man could have been chosen for the work." Mr. Taylor will report the results of his experiments in the *Bee-keepers' Review*, and we are sure that they will prove to be valuable and interesting.

IN a letter received recently from Mrs. Jennie Atchley, she says: "We now make it a rule to start 500 queen-cells daily, and we average about half finished up. So you may catch an idea of how many queens we are raising." From various sources, we gather that Mrs. Atchley is doing the largest queen business of any queen-breeder in the country. Although she had a phenomenally heavy trade last year, if we can judge aright from the letters we received, she will have a far heavier trade this summer. Does this look like a "free ad." again? Well, let it be such. We always like to commend enterprise; and if the advertiser has enough "get up and dust" to attend to a large business, and satisfy all his customers, we deem it a privilege to boost along.

SPECIAL NOTICES.

We are prepared to furnish the Langdon non-swarming attachment at Mr. L.'s prices; viz., 75 cts. each; 10 for $5.00; 100 for $40.00. By mail, 35c each extra.

JAPANESE BUCKWHEAT.

We still have a good stock of choice seed, ready to fill orders promptly; also a stock subject to our order at Rogersville, Mich., and at Blue Mound, Wis. Send on your orders. Price, bags included, one bushel, $1.20; 2 bushels, $2.20; 10 bushels, $10.00. See our advertisement, in another column.

BEESWAX DECLINED.

Beginning with this number we quote a decline of 2 cents a pound in price of beeswax. Until further notice we will pay for average wax, delivered here, 21 cts. per lb. cash, 24 in trade. In shipping us wax, be very careful to put your name and address in box, and write us, stating amount shipped, and inclosing the shipping-bill.

SAFETY BICYCLES.

The Lovell Diamond bicycle is giving good satisfaction in our locality. It rides well, is durable, easy-running, and medium priced. We have sold quite a number so far, and would be glad to have prospective purchasers of bicycles send to us for circulars and special prices. We are also prepared to furnish, at list prices ($150.00), the Columbia, Victor, Winton, and Rambler bicycles. Catalogues of any one of these wheels will be sent free on application.

PERFECT BINGHAM SMOKERS.

Since June 1st the manufacturer of Bingham smokers has included the perfect attachment on the three largest sizes, without the extra charge of 25 cts. This will be our rule hereafter. We have a few Doctor and Conqueror left without this attachment, which we will sell at 25 cts. below regular price; i. e., $1.75 and $1.50 each, postpaid, or $1.50 and $1.25 sent with other goods by express or freight. There is no change in the three smallest sizes, to which the perfect attachment has not yet been applied.

GLOBE LAWN-MOWERS.

We are having a nice trade in lawn-mowers, and our 18-inch size is nearly exhausted. We still have a good stock of 14 and 16 inch, the two most popular sizes; price $4.50 and $4.75 each. We have also plenty of the other sizes for those who prefer them. You can't buy a machine at any price that will give better satisfaction than the Globe, and you will find few machines offered so low. On a club order for two or three machines, we allow 5 per cent; and on four or more machines, 10 per cent. If you want a still cheaper machine, we can furnish it. The Young America, 10-inch, sells for $3.00; 12-inch, $3.50.

OLD-STYLE NOVICE EXTRACTORS.

We still have at Syracuse, N. Y., two No. 7 and one No. 10 Novice honey-extractors, with old-style Novice gear, which we offer at $6.00 each. They are the same in every respect, except the gearing, and a bargain at the price.

We have here two extractors, Nos. 8 and 9 of our

latest make throughout except the gear. They have the Novice gear instead of the new bevel gear, such as we now put on all machines on regular orders. To close out these two machines we offer them at $6.00 each. Our catalogue gives the size of frames they will take.

We have also a No. 10 extractor with "humpback" gear, at St. Petersburg, Fla., that we will sell f. o. b. there for $7.50. This gear is just as strong and serviceable as the new bevel gear; but the crank is on top instead of at the side of the can. It was one we made before we adopted the bevel-gear, which we now use exclusively. The supporting arm runs across the can the same as on the bevel gear, and the crank-wheel and pinion work on the same plan as the old Novice, but are three or four times as heavy and strong. This is a bargain for some one in the South in need of a machine that will take frames of any size up to 13¾ deep and 19 inches long.

CANNED CORN AND PUMPKIN.

We have made a trade with the Lake Shore Canning-Factory, so we have quite a large stock of the above canned goods. They are put up two dozen cans in a case, and the price is $1.50 for the pumpkin and $2.50 for the corn. If you have never tried any of friend Cummins' corn and pumpkin, it might be worth your while to have us put in a couple of sample cans when we are shipping you goods by freight. We will furnish sample cans for 7 and 11 cents, respectively; but your better way is to order them by the case as above.

VEGETABLE-PLANTS JUNE 15.

We have now caught up with orders, so we have almost every thing that is wanted at every season of the year. We have an especially fine lot of Flat Dutch and Fottler's Brunswick cabbage-plants. They are so large and strong that the express will be something more than on the smaller ones we have been sending out; but they are worth the difference. We have also an immense stock of White Plume celery-plants, all transplanted so as to give them plenty of room, and they are, consequently, well rooted. We have also a full line of tested seeds, and you can get a fair crop of almost every thing in the catalogue, if planted by the middle of June, on good soil and well cared for.

A few of our strawberry-plants are well rooted, but not enough of them so that we dare offer to fill orders.

Kind Words From Our Customers.

We are so very much pleased with the Lenox atomizer and sprinkler received from you a few days ago that we desire you to send us another one; also one extra bulb for poisonous liquids.
Reinersville, O., May 16. J. A. GOLDEN.

The hives, etc., came to hand June 9, every thing in good shape. The hives are the best I ever saw, and the workmanship all around is No. 1. I am well pleased with all of the goods. You will receive my future orders for bee-goods. J. T. QUIMBY.
Curtis, N. Y., June 10.

Friend Root:—I want to thank you for giving us such a nice hive as the Dovetailed. It is a pleasure to put them together, for every thing fits so nicely; and while the first one requires a good-sized thinking-cap to put it together, it is no trouble after that. I had a rousing big swarm April 20, before the hives arrived, and I had to put them in a nail-keg; but it did not take long to get one of the Dovetailed hives ready, and transfer them, and they are now doing finely. W. E. CUNNINGHAM.
Louisa, Va., May 22.

I duly received your first consignment of two plants of raspberry, January 6th, in magnificent order; in fact, a complete network of rootlets and young shoots that had quite curled round both stalks, so that it was impossible to separate them; and as I had been so successful in getting them through, I was not going to risk inflicting any damage on them here, so I planted them together, trusting to be able to distinguish them when they came above ground, as one cane was about the thickness of a pencil, while the other was only half that thickness.

The plants came up in due time, six or eight canes strong, and were getting along beautifully till the rains descended and the floods came; and what could be expected after a continuous rainfall of at least 15 or 20 feet during two months, but that they should be fairly drowned out of the ground? and that, unfortunately, is precisely what has happened. Notwithstanding this unfortunate termination, however, it is clearly demonstrated that it is quite practicable to send plants in full growth, as well as live queen-bees, all the way from America to Australia; and I claim that it is at *my* instance that both these facts have been demonstrated.
ÆNEAS WALKER.
Redland Bay, Queensland, Australia, Apr. 13.

THE NEW CRANE SMOKER, AND WHAT THE INVENTOR HAS TO SAY OF ITS MECHANICAL CONSTRUCTION.

[The following is a letter that we have just received from J. E. Crane, relative to the new smoker. Although the smoker is for the most part his own invention, he has not seen those smokers we have put on the market. This letter was not written for publication, but it shows just how he feels in regard to the way in which we have carried out the mechanical part of his invention.]

Friend Root:—The latest edition of the Crane smoker came to hand last evening. "It is just dandy," as my boy would say. I am much pleased with it. The improvements are all such as I have had in mind for some time, and it now comes the nearest to my ideal of a perfect smoker of any thing I have ever seen, if it works as well as it looks. The corners of the bellows are square, while I have made them round to keep from wearing out first. However, I am sure the square corners look better. The asbestos is ample for protection against heat. I find the blast about one-fifth stronger than one of my own make I have been testing, which is more than ample for the needs of the apiarist; and then to think that it will, with a little care, always remain so, without fire or sparks ever blowing out of the base of the fire-barrel! I believe now the smoker problem is solved. J. E. CRANE.
Middlebury, Vt., June 2.

MAILING · ·

· · BLOCKS

—FOR—

SAMPLES ·

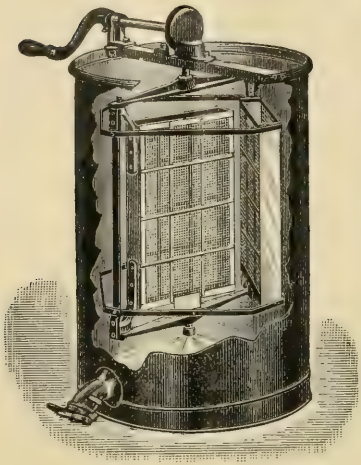
—OF—

· · HONEY.

The adjoining cut shows a very convenient package for mailing samples of honey and other liquids. The cut is only about half size of the one we are prepared to furnish, which holds ½ ounce, and gives a good taste of the honey and some to spare. We also use a very wide-mouthed bottle so the honey will run out easily. You notice the top screws on, closing it tight and making a very handy package, easily opened, and accepted by the postal authorities. We have just bought 25 gross so as to be able to sell them at only 5c each, 55c per doz. By mail, 3c extra on one, or 2c each extra in quantities.

A. I. ROOT,
Medina, O.

A Grand Success.



New Cowan Reversible Honey-Extractor.

May be Reversed without Stopping the Machine.

Strong, well made in every respect, light, and of convenient size. The can is but little larger than that of the Novice. The gear is beveled, and covered by an iron shield, and the crank outside the can. Frank McNay, of Mauston, Wis., a bee-keeper who produces tons and tons of extracted honey, says of it:

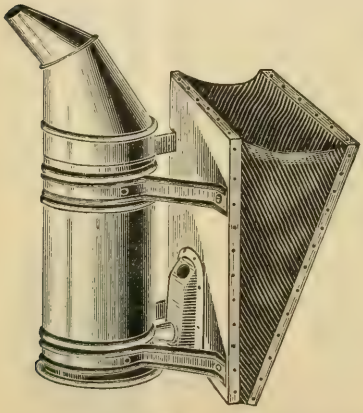
After carefully examining and trying the Cowan extractor, I have failed to find a weak part, and I do not hesitate to say that it is the best extractor made, both in regard to convenience and durability, and I shall replace all of my five machines with the Cowan as soon as possible.

It is indorsed also by J. F. McIntyre, an extensive extracted-honey producer in California; by W. Z. Hutchinson, Dr. C. C. Miller, Dr. A. B. Mason, and others.

Price all Complete, Japanned and Lettered, for L. Frame, $10.

A. I. ROOT, MEDINA, OHIO.

NEW CRANE SMOKER NOW READY.



Smoking Capacity and Strength of Blast Simply Amazing.

The **New Non-Smoke-Sucking Check-Valve,** by which a great blast is secured and the bellows kept clean, and the **double lining of Asbestos and Sheet-steel,** by which the fire-cup and nozzle are kept from becoming uncomfortably hot during usage, are **DISTINCTIVE** and **VALUABLE** features alone possessed by the new implement. It would be impossible to tell of all its unique features, and so we say, try it and fall in love with it.

Price, with 3½-inch fire-cup and curved nozzle, by mail, $2.00; by express, $1.75.

If your nearest dealer in supplies does not keep it, write to the authorized manufacturer,

A. I. ROOT, Medina, Ohio.

N. B.—Don't forget that we are headquarters for all kinds of bee-keepers' supplies. Our new 1893 catalogue of 52 pages now ready for mailing.

WE OFFER

COMB FOUNDATION

WHOLESALE AND RETAIL,

AT VERY LOW PRICES.

Satisfaction and all work guaranteed.

Price List and **samples** will be ready before the next issue.

Send for them.

Prices will range from 36 to 56 cents per lb., f. o. b.

BEESWAX WANTED. Write for prices.

W. J. FINCH, JR.,

31 E. Monroe St., 5-10db **Springfield, Ill.**

☞ In responding to this advertisement mention GLEANINGS.

75 cts. each for untested queens from best imported mothers. **W. C. Frazier, Atlantic, Iowa.**

WORLD'S FAIR—ROOMS TO LET.

Six nicely furnished rooms by week or month during World's Fair, near Exposition grounds.

Address MRS. J. E M. CONNELL, No. 6010 Union Ave., Englewood, Ill.

Good News.

For years I have not been able to dress myself; and for many weeks have had to be lifted out in my bed and chair. Under the pressure of necessity I have invented a device by which a child can put me to bed or take me up. The device can be used in any room or part of a room. A practical, simple, cheap device. Invalids will do well to correspond. I can help you. You can help me. Address

A. BEESON, Loveland, Col.

Friends,

I am now ready with those nice Italian queens, which I will sell at $1.00 for untested; tested, $1.50. Bees by the lb., $1.00; 1-frame nucleus, $1.25; 2-frame, $2.25.

Mrs. A. A. Simpson, Swarts, Pa.

Low Freight Rates and No Delays.

When you are considering where to send for your supplies the coming season, get prices and a list of goods on hand, from one of the following dealers, who handle **ROOT'S GOODS** in carload lots, thus securing them at lowest cost. Most of them, except those far distant, sell goods to users at factory prices, while those far distant add approximately only the carload rate of freight, so that you will **Save Time and Money** by buying your supplies of one of these dealers. We can not give here a list of goods kept, as it varies some at the different places according to the varying needs of each locality. Write to the place nearest you for list with prices, and when you write give a list of the goods you want, and mention this paper.

Quite a full line of goods are sold at factory prices by
F. A. Salisbury, Syracuse, N. Y.
H. G. Acklin, 1024 Mississippi St., St. Paul, Minn.
Jos. Nysewander, Des Moines, Iowa.
A good assortment is also kept for the Far West by
Barteledes & Co., Denver, Col.
For California by
G. G. Wickson & Co., San Francisco and Los Angeles.
For Oregon and Washington by
F. L. Posson & Son, Portland, Oregon.
For the Southeast Atlantic coast by
Baltimore Farm-Implement Co., Baltimore, Md.;
and for the Far South by
J. M. Jenkins, Wetumpka, Ala.

A smaller assortment, consisting chiefly of Dovetailed hives, sections smokers, foundation, and extractors is also kept by the following:
Henry F. Hagen, Rocky Ford, Colo. W. K. Ball, Reno, Nev. W. O. Victor, Wharton, Tex. John Nebel & Son, High Hill, Mo. Thos. G. Newman, Chicago, Ill. Walter S. Pouder, Indianapolis, Ind. Vickery Bros., Evansville Ind.

Our Hives, Comb Fdn., Sections, Smokers, Extractors, Perf. Zinc, etc., are furnished by a multitude of other dealers too numerous to mention. If you want to buy goods made at the Home of the Honey Bees, you can get them as cheap as you can anywhere when you consider quality and workmanship, and your orders will be taken care of promptly. Don't expect to get all the goods we advertise, from any of above dealers, and don't expect to get goods they do not agree to furnish; but find out what they agree to furnish, and at what price, by writing for list to address nearest you.

A. I. Root, Medina, O.

In writing to any of above please mention GLEANINGS.

FOR ALL KINDS OF KEEPERS SUPPLIES. ADDRESS LEAHY MFG. CO. HIGGINSVILLE MO.

In writing advertisers please mention this paper

DOVETAILED HIVES, SIMPLICITY HIVES,
SECTIONS, EXTRACTORS, ETC.
FULL LINE OF
BEE-KEEPERS' SUPPLIES.
60-PAGE CATALOGUE. 1tfdb

J. M. JENKINS, WETUMPKA, ALABAMA.

In responding to this advertisement mention GLEANINGS.

"Quigley's Golden Italians"

Are big yellow bees bred for honey-gathering and gentleness. They have stood the past severe winter without protection and without loss. Warranted purely mated. Each, $1.00; 6 for $5.00. Safe arrival and satisfaction guaranteed. Circular of queens and a full line of bee-supplies sent free.

9-tfdb **E. F. QUIGLEY, UNIONVILLE, MO.**

Please mention this paper.

Wholesale and Retail Manufacturer and Dealer in

Bee-Keepers' SUPPLIES.

One-piece Sections a specialty. As good as the Best. Send for catalogue.

W. E. SMITH, Successor to Smith & Smith, Kenton, Hardin Co., Ohio.

Please mention this paper.

FRIENDS,

I have a fine strain of Italian bees, and my apiary will be located six miles from other bees, so perfect mating of queens is assured. Will be pleased to receive your orders. Prices are as follows:

1 untested queen,	$1.00	6 untested queens,	$4.75
3 " "	2.75	12 " "	6.50

Tested queens, each, $1.50.

Safe arrival guaranteed. Address

FRANK H. HOWARD,
6-8-10d GARDEN CITY, KANSAS.

Please mention this paper

A B C OF STRAWBERRY + CULTURE.

A ‡ BOOK ‡ FOR ‡ BEGINNERS.

BY T. B. TERRY.

This is Terry's latest and best work, and has received some very high words of praise. Who that keeps bees does not also have a little garden-patch? If you would learn to raise in it that most luscious of all fruit, the strawberry, with the best results, you can not be without this little book. Even if you don't grow strawberries you will be the better for reading it. Pages one-half size of this. Fully illustrated; 144 pages. Price 35c; by mail, 40c.

A. I. ROOT, Medina, Ohio.

WIRE NETTING,

SHORT ROLLS, ETC.

We submit below, corrected from last issue, a list of the short rolls and remnants of wire netting that we have just received from the factory. We still have a good supply of 2-inch No. 19 netting 4 feet high, which we still offer at these special prices: 1 roll, $3.60; 5 rolls, $17.50; 10 rolls, $34.00. This you notice is 10c a roll higher than our last offer on this size. We have the 3-inch Nos. 19 and 20, 60 and 72 inches wide only, other widths all sold. We have put the price on the following pieces at the same rate as full rolls, except on the 72 inch, on which we offer an extra 10% discount.

Of 2-inch mesh No. 19 wire, we have the following remnants and short rolls at ⅝c per square foot. The figures at the left give the width in inches, and the other figures give the length of each piece in feet. Multiply this by the width in feet, then take two-thirds of the result to find the price of each piece.

12	117. 123.
24	69. 96, 97, 97, 114, 120. 128. 131. 143. 147.
30	45. 50. 60, 62, 64, 70. 90. 91, 101, 107, 123, 137, 140, 144, 146.
36	9, 16, 18, 18, 19. 25, 26, 38, 40, 40, 40. 49, 50, 50, 50, 53, 54, 55, 56, 58, 58, 64. 73, 73, 73, 74, 75, 82, 83. 84, 84, 87, 87. 90, 90, 92, 94. 96, 96, 96, 99, 100, 100, 100, 100, 100, 100, 100, 102, 102, 102. 105, 105, 109, 110, 111, 114, 115, 116. 118, 120, 120. 122, 124, 124, 125, 125, 128, 129, 129, 138, 142, 142, 143 143. 144, 144, 147, 147.
42	16. 20. 131.
48	11, 20, 20, 25. 29. 32. 35, 38. 40. 48. 55. 55. 60. 61, 64. 67. 68, 75. 75, 82. 83, 84, 86, 87, 90, 94, 96, 103, 119, 120, 122, 123, 123, 124, 130, 138. 138. 140, 143, 144, 144, 144. 144. 145, 145. 145, 146.
54	72. 88. 88. 143.
60	53, 71. 73. 73. 75. 78. 87. 96, 101, 101, 101. 105, 107, 110, 120, 123, 124, 138, 140 144. 144. 146. 146
72	16. 20. 42, 42, 47, 48, 57, 71, 73. 75, 75. 81, 82, 85, 85, 88, 93, 100. 100, 112. 119. 120, 123. 124. 125. 134, 142.

Of 2-inch No. 20 we have the following pieces at three-fifths of a cent per square foot. Arrive at the price in precisely the same way as above, taking three-fifths of the number of feet instead of two-thirds to get the price in cents.

30	32. 39. 73. 105. 120 140 140. 140.
36	12. 20. 22. 36, 38, 39. 56. 57. 66, 68, 79, 81. 86, 88, 100, 100, 100, 110, 119, 120, 122. 126. 128, 128, 132. 134. 136, 138. 140, 141, 144, 145.
42	142. 143.
48	41, 55, 60. 66, 70, 85, 86, 92, 98, 105, 114, 123, 140. 143, 145.
54	145.
60	46. 48. 50, 51, 60. 73, 119, 139. 139.
72	25, 38, 44, 45, 70, 75, 76, 79. 100. 100. 128, 137, 139.

In lots of 5 pieces, any one or assorted kinds, deduct 5%; 10 pieces, 10%; 25 pieces or more, 15%. On the 72-inch netting you may also deduct 10% on single-piece orders; or, in addition to above, on quantity orders. First come, first served. Generally these pieces go off very rapidly, and it may be well to name a second or third choice in case your first may be gone.

A. I. ROOT, MEDINA, O.

Books for Bee-Keepers and others.

Any of these books on which postage is not given will be forwarded by mail, postpaid, on receipt of price.

In buying books, as every thing else, we are liable to disappointment if we make a purchase without seeing the article. Admitting that the bookseller could read all the books he offers, as he has them for sale, it were hardly to be expected he would be the one to mention all the faults, as well as good things about a book. I very much desire that those who favor me with their patronage shall not be disappointed, and therefore I am going to try to prevent it by mentioning all the faults, so far as I can, that the purchaser may know what he is getting. In the following list, books that I approve I have marked with a *; those I especially approve, **; those that are not up to times, †; books that contain but little matter for the price, large type, and much space between the lines, ‡; foreign, §. The bee-books are all good.

BIBLES, HYMN-BOOKS, AND OTHER GOOD BOOKS.

As many of the bee-books are sent with other goods by freight or express, incurring no postage, we give prices separately. You will notice, that you can judge of the size of the books very well by the amount required for postage on each.

8	Bible, *good print*, neatly bound	20
10	Bunyan's Pilgrim's Progress**	30
20	Illustrated Pilgrim's Progress**	75

This is a large book of 425 pages and 175 illustrations, and would usually be called a $2.00 book. A splendid book to present to children. Sold in gilt edge for 25c more.

6	First Steps for Little Feet. By the author of the Story of the Bible. A better book for young children can not be found in the whole round of literature, and at the same time there can hardly be found a more attractive book. Beautifully bound, and fully illustrated. Price 50 c. Two copies will be sold for 75 cents. Postage six cents each.	
5	Harmony of the Gospels	35
3	John Ploughman's Talks and Pictures, by Rev. C. H. Spurgeon*	10
1	Gospel Hymns, consolidated Nos. 1, 2, 3, and 4, words only, cloth, 10 c; paper	05
2	Same, board covers	20
5	Same, words and music, small type, board covers	45
10	Same, words and music, board covers	75
3	New Testament in pretty flexible covers	05
5	New Testament, new version, paper covers	10
5	Robinson Crusoe, paper cover	10
4	Stepping Heavenward**	18
15	Story of the Bible**	1 00

A large book of 700 pages, and 274 illustrations. Will be read by almost every child.

5	The Christian's Secret of a Happy Life**	25
8	Same in cloth binding	50
	"The Life of Trust," by Geo. Muller**	1 25
1	Ten Nights in a Bar-Room, T. S. Arthur*	05
5	Tobacco Manual**	45

This is a nice book that will be sure to be read, if left around where the boys get hold of it, and any boy that reads it will be pretty safe from the tobacco habit.

BOOKS ESPECIALLY FOR BEE-KEEPERS.

Postage]		[Price without postage.
15	A B C of Bee Culture. Cloth	1 10
5	A Year Among the Bees, by C. C. Miller	45
	Advanced Bee Culture, by W. Z. Hutchinson	50
14	Bees and Bee-keeping, by Frank Cheshire, England, Vol. I.§	2 36
21	Same, Vol. II.§	2 79
	or, $5.25 for the two, postpaid.	
	Bees and Honey, by T. G. Newman	1 00
10	Cook's New Manual. Cloth	90
5	Doolittle on Queen-Rearing	95
2	Dzierzon Theory	10
1	Foul Brood; Its Management and Cure; D. A. Jones	09
1	Honey as Food and Medicine	05
10	Langstroth on the Hive and Honey-Bee‡	1 25
15	Langstroth Revised by Ch. Dadant & Son	1 25
10	Quinby's New Bee-Keeping	1 40
	Thirty Years Among the Bees, by H. Alley	50
4	Success in Bee Culture, by James Heddon	46
	Handling Bees, by Langstroth. Revised by Dadant	08
	Bee-keeping for Profit, by Dr. G. L. Tinker	25
	The Apiary; or, Bees, Bee-hives, and Bee Culture, by Geo. Neighbor & Sons, Eng.§	1 75
5	The Honey Bee, by Thos. William Cowan	95
	British Bee-Keeper's Guide Book, by Thos. William Cowan, England§	40
3	Merrybanks and His Neighbor, by A. I. Root	15
4	Winter Problem in Bee-keeping, by Pierce	46

MISCELLANEOUS HAND-BOOKS.

3	A B C of Potato Culture, Terry**	35

This is T. B. Terry's first and most masterly work. The book has had an enormous sale, and has been reprinted in foreign languages. When we are thoroughly conversant with friend Terry's system of raising potatoes, we shall be ready to handle almost any farm crop successfully. It has 48 pages and 22 illustrations.

5 | A B C of Carp Culture, by Geo. Finley 35
5 | A B C of Strawberry Culture, by T. B. Terry and A. I. Root, 144 pages; 32 illustrations 35
5 | An Egg-Farm, Stoddard** 45
| Amateur Photographer's Hand-book**.... 70
| Barn Plans and Out-Buildings*... ..... 1 50
| Canary Birds. Paper,..... ... 50
| Draining for Profit and Health, Warring.. 1 50
10 | Fuller's Grape Culturist **..... ..... 1 40
| Farming For Boys*.... 75

This is one of Joseph Harris' happiest productions, and it seems to me that it ought to make farm-life fascinating to any boy who has any sort of taste for gardening.

7 | Farm, Gardening, and Seed-Growing**..... 90

This is by Francis Brill, the veteran seed-grower, and is the only book on gardening that I am aware of that tells how market-gardeners and seed-growers raise and harvest their own seeds. It has 166 pages.

12 | Gardening for Pleasure, Henderson*..... 1 85

While "Gardening for Profit" is written with a view of making gardening PAY, it touches a good deal on the pleasure part; and "Gardening for Pleasure" takes up this matter of beautifying your homes and improving your grounds without the special point in view of making money out of it. I think most of you will need this if you get "Gardening for Profit." This work has 404 pages and 203 illustrations.

12 | Gardening for Profit, new edition**..... 1 85

This is a late revision of Peter Henderson's celebrated work. Nothing that has ever before been put in print has done so much toward making market-gardening a science and a fascinating industry. Peter Henderson stands at the head, without question, although we have many other books on these rural employments. If you can get but one book, let it be the above. It has 376 pages and 138 cuts.

| Gardening for Young and Old, Harris** ... 1 25

This is Joseph Harris' best and happiest effort. Although it goes over the same ground occupied by Peter Henderson, it particularly emphasizes thorough cultivation of the soil in preparing your ground; and this matter of adapting it to young people as well as old is brought out in a most happy vein. If your children have any sort of fancy for gardening it will pay you to make them a present of this book. It has 187 pages and 46 engravings.

10 | Garden and Farm Topics, Henderson**.... 75
| Gray's School and Field Book of Botany... 1 80
5 | Gregory on Cabbages; paper*..... 25
5 | Gregory on Squashes; paper*..... 25
5 | Gregory on Onions; paper*..... 25

The above three books, by our friend Gregory, are all valuable. The book on squashes especially is good reading for almost anybody, whether they raise squashes or not. It strikes at the very foundation of success in almost any kind of business.

15 | How to Make the Garden Pay.**..... 1 35

By T. Greiner. This is a new book, just out, and it gives the most explicit and full directions for gardening under glass of any book in the world. Those who are interested in hot-beds, cold-frames, cold-greenhouses, hot-houses or glass structures of any kind for the growth of plants, can not afford to be without the book.

| Handbook for Lumbermen..... 10
10 | Household Conveniences.. ..... 1 40
2 | How to Propagate and Grow Fruit, Green* 15
2 | Injurious Insects, Cook..... ... 25
10 | Irrigation for the Farm, Garden, and Orchard, Stewart* 1 40

This book, so far as I am informed, is almost the only work on this matter that is attracting so much interest, especially recently. Using water from springs, brooks, or windmills, to take the place of rain, during our great droughts, is the great problem before us at the present day. The book has 274 pages and 142 cuts.

3 | Maple Sugar and the Sugar-bush**..... 35

By Prof. A. J. Cook. This was written in the spring of 1887 at my request. As the author has, perhaps, one of the finest sugar-camps in the United States, as well as being an enthusiastic lover of all farm industries, he is better fitted, perhaps, to handle the subject than any other man. The book is written in Prof. Cook's happy style, combining wholesome moral lessons with the latest and best method of managing to get the finest syrup and maple sugar, with the least possible expenditure of cash and labor. Everybody who makes sugar or molasses wants the sugar-book. It has 42 pages and 35 cuts.

1 | Poultry for Pleasure and Profit**..... 10
11 | Practical Floriculture, Henderson* 1 35
10 | Profits in Poultry*..... 90
2 | Practical Turkey-raising..... ... 10

By Fanny Field. This is a 25-cent book which we offer for 10 cts.; postage, 2 cts.

4 | Peabody's Webster's Dictionary..... ... 10

Over 30,000 words and 250 illustrations.

2 | Rats: How to Rid Farms and Buildings of them, as well as other Pests of like Character 15

This little book ought to be worth dollars instead of the few cents it costs to any one who has ever been troubled with these pests, and who has not? It is written in such a happy vein that every member of the family will read it clear through, just about as soon as they get hold of it. It contains a complete summing up of the best information the world can furnish.

1 | Silk and the Silkworm..... 10
10 | Small-Fruit Culturist, Fuller..... ..... 1 40
10 | Success in Market-Gardening*... 90

This is a new book by a real, live, enterprising, successful market-gardener who lives in Arlington, a suburb of Boston, Mass. Friend Rawson has been one of the foremost to make irrigation a practical success, and he now irrigates his grounds by means of a windmill and steam-engine whenever a drought threatens to injure the crops. The book has 208 pages, and is nicely illustrated with 110 engravings.

| Ten Acres Enough.... .... 1 00
| The Silo and Ensilage, by Prof. Cook, new edition, fully illustrated 25
| Talks on Manures*..... ..... 1 75

This book, by Joseph Harris is, perhaps, the most comprehensive one we have on the subject, and the whole matter is considered by an able writer. It contains 366 pages.

2 | The Carpenter's Steel Square and its Uses. 15
10 | The New Agriculture; or, the Waters Led Captive..... 75
2 | Treatise on the Horse and his Diseases..... 10
5 | Tile Drainage, by W. I. Chamberlain..... 35

Just out. Fully illustrated, containing every thing of importance clear up to the present date.

The single chapter on digging ditches, with the illustrations given by Prof. Chamberlain, should alone make the book worth what it costs, to every one who has occasion to lay ten rods or more of tile. There is as much science in digging as in doing almost any thing else; and by following the plan directed in this book, one man will often do as much as two men without this knowledge. The book embraces every thing connected with the subject, and was written by the author while he was engaged in the work of digging the ditches and laying the tiles HIMSELF, for he has laid literally miles of tile on his own farm in Hudson, O.

5 | Tomato Culture..... 35

In three parts. Part first—by J. W. Day, of Crystal Springs, Miss., treats of tomato culture in the South, with some remarks by A. I. Root, adapting it to the North. Part second—By D Cummins, of Conneaut, O., treats of tomato culture especially for canning-factories. Part third—By A. I. Root, treats of plant-growing for market, and high-pressure gardening in general. This little book is interesting because it is one of the first rural books to come from our friends in the South. It tells of a great industry that has been steadily growing for some years past; namely, tomato-growing in the South to supply the Northern markets. The little book, which is fully illustrated, gives us some pleasant glimpses of the possibilities and probabilities of the future of Southern agriculture. Even though you do not grow tomatoes to any considerable extent, you will find the book brimful of suggestions of short cuts in agriculture and horticulture, and especially in the line of market-gardening.

5 | The New Onion Culture*..... 20

This book is by T. Greiner, and it gives full particulars of the plan of planting onion seed in a greenhouse, hot-bed, or cold-frame, and planting the onions out in the field at the time we usually sow the seed. The author thinks that 2000 bushels of the large tropical onion can by this method be raised on an acre.

2 | The New Celery Culture 15

This summing-up of this new industry amounts to this: You fix your ground just as rich as you can possibly get it, with stable manure, chemical fertilizers, or any thing else that will do the business. Then put out your plants 7 inches apart each way, and give them water enough to make them boom right along from the word go. The idea is somewhat new; but enough succeeded in 1892 to demonstrate that, like the new onion culture, it promises great possibilities.

3 | Winter Care of Horses and Cattle..... ... 35

This is friend Terry's second book in regard to farm matters; but it is so intimately connected with his potato-book that it reads almost like a sequel to it. If you have only a horse or a cow, I think it will pay you to invest in the book. It has 44 pages and 4 cuts.

8 | What to Do and How to be Happy While Doing It, by A. I. Root..... 50
3 | Wood's Common Objects of the Microscope**..... 47

NEW BOOKS ON GARDENING.

2 | Celery for Profit, by T. Greiner..... 25

The first really full and complete book on celery culture, at a moderate price, that we have had. It is full of pictures, and the whole thing is made so plain that a schoolboy ought to be able to grow paying crops at once, without any assistance except from the book.

3 | Onions for Profit 45

Fully up to the times, and includes both the old onion culture and the new method. The book is fully illustrated, and written with all the enthusiasm and interest that characterize its author, T. Greiner. Even if one is not particularly interested in the business, almost any person who picks up Greiner's books will like to read them through.

5 | Manures; How to Make and How to Use them; in paper covers..... 45
6 | The same in cloth covers..... 65

Covering the whole matter, and discussing every thing to be found on the farm, refuse from factories, mineral fertilizers from mines, etc. It is a complete summing-up of the whole matter. It is written by F. W. Sempers.

7 | Market-gardening and Farm Notes, by Burnett Landreth 90

The Landreths are the pioneer seedsmen of America; and the book is worth fully as much as we might expect it to be. I think I received hints from it worth the price, before it had been in my hands fifteen minutes. It is exceedingly practical, and tells what has been done and what is BEING done, more than it discourses on theory.

A. I. ROOT. Medina, O.

EARLY QUEENS.

All Italians. *3 and 5 Banded.*	May	June and after
1 untested queen	$1 00	75
6 untested queens	5 00	4 00
1 tested queen	1 50	1 50
3 tested queens	4 00	4 00
Select tested	2 50	2 50

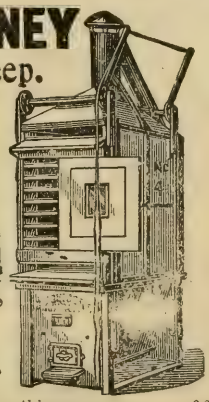
Two-frame nuclei with any queen, $1.50 each extra.
Safe arrival guaranteed. 9-12db
W. J. ELLISON, Catchall, Sumter Co., S. C.
☞In responding to this advertisement mention GLEANINGS.

WANTED—Every reader of GLEANINGS to send for one of my
LADIES' TOILET-CASES.
Well worth $1.00 in any family. Will send sample by mail for 30 cts. in stamps, returnable if not satisfactory. Address *J. C. Frisbee, General Agent, 172 Maple St., Denver, Col.*
Reference, A. I. Root, Medina, O. 10tfdb
Please mention this paper.

The Golden Beauties.

My 5-banded Italian queens can not be surpassed for honey-gathering, gentleness, prolificness, and beauty. Untested, 75c each; tested, $1.00; breeding queens, $2.50 to $3.00. We warrant our queens purely mated. On orders for 5 or over, 10 per cent discount. Safe arrival and satisfaction guaranteed.
Address **C. B. Bankston, Chrisman, Tex.** 8tfdb

MAKE MONEY While You Sleep.



STAHL'S EXCELSIOR FRUIT DRIER

Evaporates Fruit **DAY and NIGHT.** Catalogue free upon application.
Address
WILLIAM STAHL EVAPORATOR COMP'Y, QUINCY, ILL.
Please mention this paper 9-24db

BEES QUEENS SMOKERS, SECTIONS, COMB FOUNDATION
And all Apiarian Supplies cheap. Send for Catalogue.
E. T. Flanagan, Belleville, Ill.

Bee-Hives.

Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue 23-22db
W. H. PUTNAM, River Falls, Pierce Co., Wis.

Try Duval's Golden 5-Banded Bees.

That have given such general satisfaction. They are the best honey-gatherers, gentle, and not surpassed for beauty. Queens ready now at $1.25; 6 for $6.00. For full particulars and prices send for circular. **C. D. DUVAL, SPENCERVILLE, MD.**
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What Stood the Test?

Hilton's Improved Chaff Hives have for the past 15 years. Send for his free illustrated catalogue of every thing needed in the apiary, of
Best Quality and Lowest Prices.
One hundred colonies of Bees for sale. Write for prices, and address
GEO. E. HILTON, Fremont, Mich.
8-13db Please mention this paper.

Golden Queens From Texas.

My bees can not be surpassed for business, beauty, and gentleness. Safe arrival and satisfaction guaranteed. Untested queens—March, April, and May—$1 each. **50** fine Tested Queens for early orders, $1.50 each. Order early. Send for price list. 5-16db.
J. D. GIVENS, Box 3, Lubson, Tex.

For new price list of *PURE ITALIAN BEES AND QUEENS, AND WHITE AND BROWN FERRETS, ADDRESS N. A. KNAPP, ROCHESTER, LORAIN CO., O.*

Please mention this paper. 4tfdb

Muth's Honey-Extractor.

Square Glass Honey-Jars,
Tin Buckets, Bee-hives.
Honey-Sections, &c., &c.
Perfection Cold-Blast Smokers.
APPLY TO
CHAS. F. MUTH & SON, Cincinnati, O.
Send 10-ct. stamp for "Practical Hints to Bee-keepers."
Please mention this paper.

TAKE NOTICE!

BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH,
14tfdb New London, Wis.

Eggs and Plants.

Several varieties. Best quality. Any quantity. Finely illustrated catalogue free. Address
GEER BROS., St. Marys, Mo, or H. B. GEER, Nashville, Tenn.
Please mention this paper. 5tfdb

Did You Know

That my 44-page Catalogue is now ready? I have the largest stock of Bee-keepers' Supplies in New England, at prices away down. My brand of XX White Thin Foundation, 12 feet to the lb., is the finest in the market (so say my customers). Just send a postal for samples and prices, before you forget it. Address
7tfdb **WM. W. CARY, Colrain, Mass.**
In writing to advertisers please mention this paper.

Deduct 3 Cts. per Pound

From our retail prices of foundation, given in our 1893 price list.

M. H. HUNT, - Bell Branch, - Mich.

For Sale at a Bargain.

The entire stock of bees and paraphernalia, all of superior quality and of the most modern and approved kind, of the late Albert Edwards. Enquire of Mrs. Albert Edwards, Box 18, Skaneateles, N. Y.

COOK, NOTTINGHAM & PIERCE.

5-Banded Golden Italians.

Three or five banded queens, each, 75c; 6 for $4.25. Nuclei and full colonies cheap. Catalogue free.

9-tfdb *Chas. H. Thies, Steeleville, Ill.*

Root's Goods AT ROOT'S PRICES can be had at Des Moines, Iowa. Address Jos. Nysewander.

Choice Seed of the

Japanese Buckwheat.

It does not pay to devote valuable land to the production of any plant simply for the honey it may produce. In providing forage for the bees, other than what they naturally find, choice should be made of those plants that produce honey and yet are a paying crop aside from the honey. One of these plants which generally produces honey, and at a time when other bee-pasturage is usually scarce, is buckwheat. The best variety of this that we are acquainted with is the Japanese, which has been before the public for five or six years. With favorable conditions and good soil this will easily produce 50 bushels per acre, and it matures within a few weeks from the time it is sown. It rarely brings less than 50c a bushel for flouring, and often a much higher price. The price the past year has ranged much higher than usual, being from 70c to $1.00 a bushel.

The time for seeding is at hand, and we are provided with a good stock of choice seed which we offer, while it lasts, at the following prices: 1-lb. 5c; 1 peck, 40c; ½ bush., 70c; 1 bush., $1.20; 2 bush., $2.20; 10 bush., $10.00; bags included. By mail, 8c per pound extra for postage.

A. I. ROOT, MEDINA, OHIO.

June 25th.

By my system of dequeening at the opening of a harvest, I shall have *300 tested queens* of the leather-back strain of Italians for delivery *about June 25.* Prices, 75c each; $7.50 per dozen. All young and prolific; none over one year old. *Book your orders now;* pay when queens arrive. None will be sent out at these prices before June 20, nor after July 10. First come, first served. 11tfdb

A. F. BROWN, Box 16, New Smyrna, Fla.
Formerly of Huntington, Fla.

IF YOU WANT BEES

that will just "roll" in the honey, try Moore's strain of Italians, the result of 14 years' careful breeding.

Wm. Stevenson, Pasadena, Cal., says: "I have tried queens from several of the best queen-raisers, but have found none that equal your strain."

Reduced prices: Warranted queens, 80c each: 3 for $2.00. Strong 3-frame nucleus, with warranted queen, $2.50. Safe arrival and satisfaction guaranteed. Those who have never dealt with me, I refer to A. I. Root, who has purchased of me over 600 queens. Circular free.

J. P. MOORE,
11-12d *Morgan, Pendleton Co., Ky.*

☞ In responding to this advertisement mention GLEANINGS.

READY AGAIN!

My location enables me to rear those nice Golden Queens, by Doolittle's method, as cheaply now as at any time in the North. Untested, 75c: 6 for $4.00; 12, $7.50. Last year's tested, $1.25; select, $1.75; breeder, $2.50. Safe arrival and satisfaction guaranteed.

J. B. CASE, Port Orange, Vol. Co., Fla. 5tfdb

I TELL you what, Jones, **Levering Bros.** sell the best goods and at the lowest price of any one I've struck yet. The largest and best equipped

Bee-Hive Factory

in the West. The Dovetailed Hive and New Hoffman self-spacing frame a specialty. Every thing used by practical bee-keepers at wholesale and retail. Send for their free Illustrated Price List, and save money. Supply Dealers, send for their Wholesale List. Address

LEVERING BROS.,
3-14db **Wiota, Cass Co., Iowa.**
Please mention this paper.

BEE-HIVES AND SUPPLIES.

Send for catalogue free. Address **SAMUEL JONES,** Highland Park College, Des Moines. Iowa. 1-19db

Read what J. I. PARENT, of CHARLTON, N. Y., says—"We cut with one of your Combined Machines last winter 50 chaff hives with 7-inch cap, 100 honey-racks, 500 broad frames, 2,000 honey-boxes, and a great deal of other work. This winter we have doubled the amount of bee-hives, etc., to make, and we expect to do it all with this saw. It will do all you say it will." Catalogue and Price List free. Address W. F. & JOHN BARNES, 545 Ruby St., Rockford, Ill.

When more convenient, orders for Barnes' Foot-Power Machinery may be sent to me. A. I. ROOT.
23tfd

OTTUMWA BEE-HIVE FACTORY.

Bee-keepers, look to your interests. Every thing in the line of bee-supplies constantly on hand. Price list free. **GREGORY BROS. & SON,**
1-23d Ottumwa, Ia. South side.

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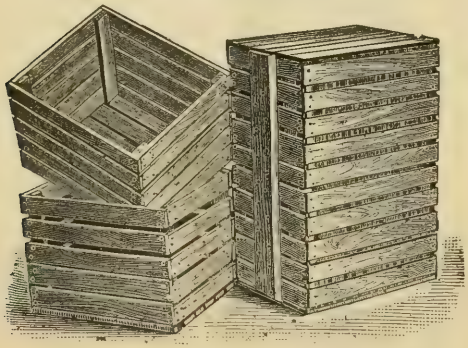
CONVENTION NOTICE.

The Carolina Bee-keepers' Association will hold its sixth semi annual reunion at the court-house, Charlotte, N. C., July 20, at 10 A.M. All interested in bee-keeping are invited.

Steel Creek, N. C. A. L. BEACH, Sec.

BUSHEL BOXES.



The above cut shows our new-style *all-slatted bushel box*. We have two other styles; one has slatted bottom and sides with solid ends in three pieces called the *slatted bushel box*. The other has solid ends and close bottom and sides, and is bound with galvanized iron and called the *galvanized bound box*. These boxes were devised by T. B. Terry for handling potatoes, for which purpose nothing could be handier. The potatoes are picked up into the boxes in the field and left in them till sold. Other crops, such as cucumbers, tomatoes, and apples are being handled in these same boxes. They are of such a size that two go crosswise in an ordinary wagon-box. Outside measure is 14¼x16⅞x12½ deep, and they hold a bushel of potatoes level full so they can be piled one upon another. The above cut shows two *all-slatted* boxes nailed up, and a bundle of 15 alongside; 13 of the 15 are in the flat, packed inside the other two, and nails of the proper kinds are included. The *slatted* and *galvanized bound* boxes are put up in the same way, except there are only 12 in a package instead of 15. Each package weighs about 85 to 90 lbs.

PRICE LIST.

All-slatted bushel box, per crate of 15 .. $1 50
Slatted bushel box, per crate of 12 .. 1 50
Galvanized bound bushel box, per crate of 12 .... 2 10

In lots of ten crates, 5 per cent discount will be deducted. Price each, nailed, 15, 18, and 22 cents, respectively. A 20-page pamphlet called Handling Farm Produce, telling all about these boxes, mailed free on application.

A. I. ROOT, Medina, O.

LITHOGRAPH LABELS

In 12 Colors, at $1.50 per 1000.

The 12 colors are all on each label. They are oblong in shape, measuring 2⅛x2⅝. They are about the nicest labels we ever saw for glass tumblers, pails, and small packages of honey. We will mail a sample, inclosed in our label catalogue, free on application, and will furnish them postpaid at the following prices: 5 cts. for 10; 25 cts. for 100; $1.00 for 500; $1.75 for 1000. A. I. ROOT, Medina, O.

Wants or Exchange Department.

Notices will be inserted under this head at one-half our usual rates. All advertisements intended for this department must not exceed five lines, and you must SAY you want your adv't in this department, or we will not be responsible for errors. You can have the notice as many lines as you please, but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices offering articles for sale, can not be inserted under this head. For such our regular rates of 20 cts. a line will be charged, and they will be put with the regular advertisements. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange Italian bees in Simplicity hives, for fine stock of pigs or poultry.
E. SHIMEL, McCuneville, Ohio.

WANTED.—Information as to the whereabouts of a climate with beneficial effects to throat and lung ailments, also to obtain employment in said climate. Have had some experience in apiculture and carpentry; am handy with almost all sorts of tools. Can give good reference.
A GLEANINGS Subscriber, Gehm, Putnam Co., Mo.

WANTED.—To exchange 4¼x4¼ sections for queens, and bees by the pound, in nuclei or full swarms. J. C. SAYLES, Hartford, Wis.

WANTED.—To exchange Novice extractor, 8-frame hives, and rubber-stamp outfit, for press and type, beeswax, bicycle, honey, or offers.
THE MODEL STAMP-WORKS, Shenandoah, Iowa.

WANTED.—Honey or bicycle or offers for Lex. Ky. Jersey bull calf 8 weeks old.
J. C. CAPEHART, St. Albans, Kanawha Co., W. Va.

FOR exchange.—A lot 30x100 feet for Barnes foot power saw and f'd'n mill. L. L. ESENHOWER.
1053 Chestnut St., Reading, Berks Co., Pa.

WANTED.—A good yearling yellow drone-laying Carniolan queen. POGANUC APIARY,
Syracuse, Hamilton Co., Kansas.

WANTED.—To exchange for safety bicycle, two calves, male calf one week old, from full Jersey cow and one-half and one-half Jersey and Holstein sire; heifer calf from one-half Jersey cow and full Jersey sire, three weeks old. Wheel must be good.
J. J. MCCOY, Mt. Erie, Illinois.

Black and Hybrid Queens For Sale.

For the benefit of friends who have black or hybrid queens which they wish to dispose of, we will insert notices free of charge, as below. We do this because there is hardly value enough in these queens to pay for buying them up and keeping them in stock; and yet it is oftentimes quite an accommodation to those who can not afford higher-priced ones.

Mismated and hybrid queens, 30 and 25c each, respectively. W. W. KULP, Pottstown, Pa.

Young and prolific hybrid and black queens, some 15 or 20 in number, most of them reared in '93; 30c each, or 4 for $1.00. W. A. CAMPBELL,
Doogan, Murray Co., Ga.

Some black and hybrid queens for sale at 25c apiece, or five for $1.00. Send immediately for queens, and send money when queens are received.
E. R. MILLER,
Gunn City, Cass Co., Mo.

HONEY COLUMN.

CITY MARKETS.

CHICAGO.—*Honey.*—The honey market is in a dormant condition at the present time, there being very little new comb offered, and the old is not in salable condition, all the best lots having gone into consumption. The weather at present is hot, and, we should judge, very favorable to a flow of nectar. Extracted honey is also in light demand, as parties are waiting to see what the crop will be. We quote from 6@7½c. Beeswax, 23@25.

R. A. BURNETT & Co.,
June 19. 161 So. Water St., Chicago, Ill.

BUFFALO.—*Honey.*—There are no new features to note in our honey market. We notice no arrivals of new, nor is there any demand to speak of; only a few remnants of old. Quite good brings mostly 16c; common, etc., 5@10c. There is no trade for extracted except at a very low price indeed. Let us hear in regard to the ensuing crop, as we handle large quantities and know what to do with it.

BATTERSON & Co.,
June 19. Buffalo, N. Y.

CLEVELAND.—*Honey.*—Market bare of honey. New California, 1-lb. white, would bring good prices in this market. Demand for beeswax good.

WILLIAMS BROS.,
June 19. 80 & 82 Broadway, Cleveland, O.

BOSTON.—*Honey.*—There is very little demand for comb honey and very little stock here. New honey will sell fairly well on arrival. Prices are about the same, from 14@16c. Extracted honey in fair supply, selling from 8@9c for Florida. No beeswax on hand.

BLAKE & RIPLEY,
June 19. Boston, Mass.

CINCINNATI.—*Honey.*—New extracted honey has commenced to arrive lively, and is in fair demand at 5@8c on arrival. Comb honey is of slow demand, with nothing choice on the market; prices nominal. There is a fair demand for beeswax, and arrivals are good at 22@25c for good to choice yellow.

CHAS. F. MUTH & SON,
June 19. Cincinnati, O.

ST. LOUIS.—*Honey.*—Market very quiet—no life to it. It is hard to get offers on any quantity. Prices are quietly settling to lower figures. Extracted, 5@5¾ in barrels; 6¼@7 in cans. Beeswax, prime, 24c.

D. G. TUTT GROCER CO.,
June 19. St. Louis, Mo.

KANSAS CITY.—*Honey.*—No honey on the market. Prospects for half a crop, our section of the State.

HAMBLIN & BEARSS,
June 19. Kansas City, Mo.

DETROIT.—*Honey.*—Very little demand, and market bare of desirable grades. Extracted, 7@8c. Beeswax, 23@24.

M. H. HUNT,
June 19. Bell Branch, Mich.

KANSAS CITY.—*Honey.*—No new honey in the market yet; all old cleaned up. Think new 1-lb. comb will sell for about 16c. Extracted, nominal, 5@7.

CLEMONS, MASON & CO.,
June 20. Kansas City, Mo.

ALBANY.—*Honey.*—Honey market very quiet now, with no receipts except some extracted, on which no market price has been established yet, as demand is light. We look for a good demand as soon as new crop comes. Beeswax is more plentiful at 27@28 for best.

H. R. WRIGHT,
June 25. Albany, N. Y.

SAN FRANCISCO.—*Honey.*—Honey is rather easy and arrivals increase. The quality is excellent this season, and the crop will be a good average but not as large at anticipated. We quote 5@6 for extracted. Comb honey, 1-lb., 11@11½. Beeswax, not plentiful, at 24@25.

SCHACHT, LEMCKE & STEINER,
June 22. San Francisco, Cal.

FOR SALE—1893 white and alsike clover extracted honey. Sample on application.

J. B. MURRAY, Ada, Ohio.

BUFFALO, N. Y. Unsurpassed Honey Market. BATTERSON & CO. Responsible, Reliable, Commission Merchants. 18tfdb **and Prompt.**

Muth's Honey

In packages of ¼, ½, 1, and 5 lbs.,
25c. per lb.
If sent by mail, add 17c for every lb.

C. F. Muth & Son,
976-978 Centr. Ave.,
CINCINNATI, OHIO.

Caramels.

☞In responding to this advertisement mention GLEANINGS.

The Coming Game Bird.
The Chinese Pheasant, or Mongolian Ring Neck.
Send for descriptive catalogue to
JAS. A. SIMPSON, Alexis, Ill.
☞In responding to this advertisement mention GLEANINGS.

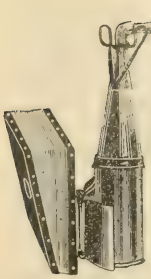
Root's Goods for the West.
Address Jos. Nysewander, Des Moines, Ia.

$6.00 will buy one good "EDLAND" typewriter, 78 characters, almost new; cost $11.00.
J. N. PATTERSON, England, Pa.

MAILING BLOCKS —FOR— SAMPLES —OF— HONEY.

The adjoining cut shows a very convenient package for mailing samples of honey and other liquids. The cut is only about half size of the one we are prepared to furnish, which holds ½ ounce, and gives a good taste of the honey and some to spare. We also use a very wide-mouthed bottle so the honey will run out easily. You notice the top screws on, closing it tight and making a very handy package, easily opened, and accepted by the postal authorities. We have just bought 25 gross so as to be able to sell them at only 5c each, 55c per doz. By mail, 3c extra on one, or 2c each extra in quantities.

A. I. ROOT,
Medina, O.



Bingham Perfect Smokers.

CHEAPEST AND BEST ON EARTH.

Patented 1878, 1882, and 1892.

The Doctor, 3½-inch stove, largest smoke and fuel capacity made, $2.00; Conqueror, 3-inch stove, $1.75: Large, $1.50. Postpaid per mail. They all have wide shields, movable bent nozzle, coiled steel wire handle, and inverted Bingham bellows, with Bingham cleated joints. Perfect in principle, perfect in detail, and 14 years the standard in every country.

The Bingham & Hetherington uncapping-knife also belongs in the Perfect series; $1.15.

Original, Unimproved Bingham Bee-Smokers.

Our smaller smokers are as we have always made them. Little Wonder, narrow shield, 1¾-inch stove, 65 cts.; Plain, narrow shield, 2-inch stove, $1.00; Extra, 2-inch stove, wide shield, $1.25.

They are a great convenience in handling the cone and smoke. We can recommend it to all bee-keepers as being just the thing.—QUEIN & FYKE, Ettawanda, Cal.

The best to be had.—C. J. DONALDSON, Lapeer, Mich.

As perfect as need be.—H. M. SEELY, Harford, Pa.

It is just what I wanted.—J. C. KEITHLEY, Shacklefall, Mo.

They are a desirable attachment.—WALTER S. POUDER, Indianapolis, Ind.

I would almost as lief do without the smoke as without the attachments.—HENRY F. HAGEN, Rocky Ford, Col.

To sell again, or rates or circular, send card to **T. F. BINGHAM, Abronia, Mich.**

PATENT WIRED COMB FOUNDATION

Has No Sag in Brood-frames.

Thin Flat-Bottom Foundation

Has no Fishbone in the Surplus Honey.

Being the cleanest, it is usually worked the quickest of any foundation made.

J. VAN DEUSEN & SONS,

Sole Manufacturers,
Sprout Brook, Montgomery Co., N. Y.

If you wish to

Smile,

Try my fine Italian queens. Either 3 or 5 banded, bred in different yards, 75 cts. each; $4.25 for 6, or $8.00 per doz. Prices to dealers, and by the quantity, on application. Fine breeders, $5.00; always on hand. Prices for those that produce strictly 5-banded bees, on application. Remember, I guarantee safe arrival, and satisfaction in the bounds of reason.

MRS. JENNIE ATCHLEY,
Greenville, Hunt Co., Tex.

BUCKEYE APIARY.

JULY PRICES.

I sell tested Italian queens at	$1	00
Untested " "		80
" Gray Carniolan queens		80
" 5-banded queens		80
Bees by the pound		80

And all kinds of Supplies at Root's prices.

CHAS. L. HILL,
Box 120. Dennison, O.

Eastern Supply House.

We furnish everything used in the apiary, and at bottom prices. Illustrated circular free.

I. J. STRINGHAM, 105 Park Place, N. Y.

21-20db Please mention this paper.

Cash for Beeswax!

Will pay 21c per lb. cash, or 24c in trade for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 28c per lb., or 30c for *best selected wax.*

Unless you put your name *on the box*, and notify us by mail of amount sent, I can not hold myself responsible for mistakes. It will not pay as a general thing to send wax by *express.*

A. I. ROOT, Medina, Ohio.

SAY!

Did you know that Green sold *TESTED QUEENS* OF HIS CHOICE STRAIN OF YELLOW HUSTLERS

For Only $1.00?

It's so. Before July 1st, $1.50. Mismated queens, 35c. Have your orders booked now. Full colonies and nuclei at low prices. 12tfdb

J. A. Green, Ottawa, Illinois.

The Northwest Home of the Honey Bee.

COLE & LOWERS,

DEALERS

A. I. ROOT'S BEE SUPPLIES

BREEDERS OF ITALIAN QUEENS AND BEES.

Write for Price List.

LATONA, KING CO., WASHINGTON.

Please mention this paper. 12-13-14db

HUNT'S FOUNDATION FACTORY.

Send for **Free Samples** of the **Finest Foundation** and **Sections** made. Special prices and advantages to dealers in Foundation. Send for my new illustrated **Free Price List** of every thing needed in the apiary M. H. HUNT, Bell Branch, Mich.

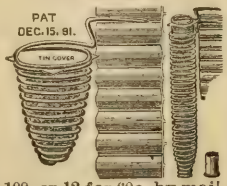
2tfdb Please mention this paper.

Central Bee-Hive Factory

And Bee-keepers' Supply-house of Illinois. Write for Catalogue for 1893. Address

F. N. JOHNSON, P. O. Box 137,
8-13bd Knoxville, Knox Co., Illinois.

CONTROL YOUR SWARMS.



N. D. West's Spiral Wire Queen-Cell Protectors will do it, and you can RE-QUEEN your apiary during the swarming season. Pronounced the best by such men as Capt. J. E. Hetherington, Cherry Valley, N. Y.; P. H. Elwood, Starkville, N. Y., and others. Cell-Protectors, $3.00 per 100, or 12 for 60c, by mail. Cages, $5.00 per 100, or 12 for $1.00, by mail. Samples of both, with circular explaining, 25 cts. The cages are used for hatching queens in any hive, and are the best Bee-Escape in use. Address 5-8db

N. D. WEST, Middleburgh, Schoharie Co., N. Y.

Please mention this paper.

Low Freight Rates and No Delays.

When you are considering where to send for your supplies the coming season, get prices and a list of goods on hand, from one of the following dealers, who handle **ROOT'S GOODS** in carload lots, thus securing them at lowest cost. Most of them, except those far distant, sell goods to users at factory prices, while those far distant add approximately only the carload rate of freight, so that you will **Save Time and Money** by buying your supplies of one of these dealers. We can not give here a list of goods kept, as it varies some at the different places according to the varying needs of each locality. Write to the place nearest you for list with prices, and when you write give a list of the goods you want, and mention this paper.

Quite a full line of goods are sold at factory prices by
F. A. Salisbury, Syracuse, N. Y.
H. G. Acklin, 1024 Mississippi St., St. Paul, Minn.
Jos. Nysewander, Des Moines, Iowa.
A good assortment is also kept for the Far West by
Barteledes & Co., Denver, Col.
For California by
G. G. Wickson & Co., San Francisco and Los Angeles.
For Oregon and Washington by
F. L. Posson & Son, Portland, Oregon.
For the Southeast Atlantic coast by
Baltimore Farm-Implement Co., Baltimore, Md.;
and for the Far South by
J. M. Jenkins, Wetumpka, Ala.

A smaller assortment, consisting chiefly of Dovetailed hives, sections smokers, foundation, and extractors is also kept by the following:
Henry F. Hagen, Rocky Ford, Colo. W. K. Ball, Reno, Nev. W. O. Victor, Wharton, Tex. John Nebel & Son, High Hill, Mo. Thos. G. Newman, Chicago, Ill. Walter S. Pouder, Indianapolis, Ind. Vickery Bros., Evansville Ind.

Our Hives, Comb Fdn., Sections, Smokers, Extractors, Perf. Zinc, etc., are furnished by a multitude of other dealers too numerous to mention. If you want to buy goods made at the Home of the Honey Bees, you can get them as cheap as you can anywhere when you consider quality and workmanship, and your orders will be taken care of promptly. Don't expect to get all the goods we advertise, from any of above dealers, and don't expect to get goods they do not agree to furnish; but find out what they agree to furnish, and at what price, by writing for list to address nearest you.

A. I. Root, Medina, O.

In writing to any of above please mention GLEANINGS.

In writing advertisers please mention this paper

DOVETAILED HIVES, SIMPLICITY HIVES,
SECTIONS, EXTRACTORS, ETC.
FULL LINE OF
BEE-KEEPERS' SUPPLIES.
60-PAGE CATALOGUE. 1tfdb

J. M. JENKINS, WETUMPKA, ALABAMA.

In responding to this advertisement mention GLEANINGS.

"Quigley's Golden Italians"

Are big yellow bees bred for honey-gathering and gentleness. They have stood the past severe winter without protection and without loss. Warranted purely mated. Each, $1.00; 6 for $5.00. Safe arrival and satisfaction guaranteed. Circular of queens and a full line of bee-supplies sent free.

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One-piece Sections a specialty. As good as the Best. Send for catalogue.
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Honey to secure the completion of unfinished sections can be made very profitable if rightly managed during the hot weather of July and August. In "ADVANCED BEE CULTURE" may be found complete instructions regarding the selection and preparation of colonies, preparation of the feed, manipulation necessary to secure the rapid capping of the combs, time for removing the honey, and how to manage if a few sections in a case are not quite complete; in short, all of the "kinks" that have been learned from years of experience and the "feeding back" of tons of honey.

Price of the book, 50 cts.; the REVIEW one year, and the book, for $1.25; or the REVIEW the remainder of the year, and the book, for only 75 cts. Stamps taken, either U. S. or Canadian.

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PORTER BEE ESCAPES are used and pronounced a great labor-saving implement by **Chas. Dadant & Son, Prof. A. J. Cook, Chas. F. Muth, Jno. S. Reese, J. H. Martin, John Andrews, F. A. Gemmell, Wm. McEvoy, A. F. Brown, Thomas Pierce,** and many other prominent bee-keepers. Descriptive circular and testimonials mailed free. PRICES:—Each, post-paid, with directions, 20c.; per doz., $2.25. *Return them and get your money back after trial if not satisfied.* For sale by dealers. Address **R. & E. C. PORTER LEWISTOWN, ILL.**

HELP

Is in my reach at last. I have 150 fine young queens to ship in the next 10 days, and more hatching at a lively rate every day.

Send your order right along; you know what my queens are; if you do not, I will just say they **can not be beat** for **Business, Beauty, and Gentleness**; see page 468, last GLEANINGS.

If you have not tried these 5-banded beauties you surely should.

Warranted to get bees with 3 or more yellow bands, $1.00 each; 6 for $5.00; or, if you want a queen *warranted* to get all 4 and 5 banded bees, inquire about my "special mated" queens.

Safe arrival guaranteed. Money-order office, Cable, Ill,

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Italians. Bred for business, beauty, and gentleness. Tested queen, $1.25. Untested, 75c. 1 lb. bees in shipping-cage, 75c.

MRS. A. M. KNEELAND,
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PASTEBOARD BOXES, OR CARTONS.

FIG. 118.

Bee-keepers are realizing more and more the value of these cartons for putting their comb honey in marketable shape. Other articles of home consumption are put up in a neat attractive way, and in shape to be handed to the customer and carried safely without wrapping. Why not sections of comb honey, especially when the cost of the boxes is so low? Cartons in stock are for 1⅞ and 1⅝ sections.

TABLE OF PRICES OF 1-LB. CARTONS.

Name or designation. Price—	100	500	1000
1-lb. carton, plain 1c each; 25 for 20c..	$ 60	$2 75	$5 00
1-lb. carton, printed one side, one color, name and address	90	3 50	6 00
1-lb. carton, printed two or three colors, one side.	1 00	3 75	6 50
1-lb. carton, printed one color on both sides, name and address.....	1 00	3 75	6 50
1-lb. carton, printed two or three colors, both sides	1 10	4 00	7 00

If sent by mail, postage will be 2c each; or in lots of 25 or more, 1c each. All the above have tape handles. Without tapes, $1.00 per 1000 less. The quality of the boxes is fair, being made of strawboard, plated outside. If more than 1000 are wanted, write for prices.

A. I. ROOT, Medina, O

Oh, Mamma!

Have you heard of the **FREE 200-Page Bee-Book** given to every **NEW** Subscriber to the old **AMERICAN BEE JOURNAL?** Oldest, Largest, Best, Cheapest and the only **Weekly** Bee-Paper in America. 32-pages; **$1** a year. *Sample free*

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To new subscribers: the journal alone sent for 3 months for 20 cents.

Great Reduction.

Sections at greatly reduced prices. Hives, Shipping-cases, etc., at Bed-Rock Prices. Write for free Illustrated Catalogue and Price List.

G. B. Lewis Co.,

Watertown, = = = Wis.

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QUEENS.

Queens, either 3 or 5 banded, 75 cts. each; ½ dozen, $4.25; 1 dozen, $8.00. Breeding queens, $2.00. Circular free.

J. F. MICHAEL, German, Darke Co., O.

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BIG DISCOUNT on Foundation and Sections. Thin foundation, 50 cts. per lb.; brood, 40 cts. No. sections, $2.75 per M. Every thing cheap, price list free. E. H. TRUMPER, Bankers, Mich.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
PUBLISHED BY A. I. ROOT MEDINA OHIO
$1.00 PER YEAR

Vol. XXI. JULY 1, 1893. No. 13.

STRAY STRAWS

FROM DR. C. C. MILLER.

HOW DO YOU make out at prevention of swarms?

WHITE CLOVER is simply immense this year. Oh for the bees to gather it!

THE NOM DE PLUME epidemic seems to be breaking out again in the bee-journals.

PYTHAGORAS, who lived to the age of 90, attributed his longevity to the use of honey.

FRIEND ROOT, you did a good thing when you turned W. P. loose among those ancient bee-books. How he does revel in them!

WHITE CLOVER, says GLEANINGS, "is following up the locusts very closely." This year it got in ahead of locusts at Marengo. Queer season, anyhow.

CAN A QUEEN get through a smaller perforation while a virgin than after laying? is a question I wish some of our careful investigators would settle.

WHICH IS BEST—to grumble because I haven't bees enough to store all the honey clover yields, or to be thankful all over because my bees have all the honey they can handle?

CUTTING QUEEN-CELLS, it is certain, can not be relied on as a preventive of swarming; but it is equally certain that the practice has a tendency to delay and in some cases to entirely prevent it.

RAMBLER'S HEAD'S LEVEL as to the bottle business. Local prohibition is a good step, but it's not a very long step. Marengo has had no saloons for 30 years, but the neighboring towns make drunkards of her boys.

MICHIGAN'S AHEAD! Got an experiment station to be run at his own home by a live bee-man, bee-keepers to have direct reports from him in a live bee-paper. I don't blame Hutch a bit for doing a little mild crowing.

SHEEP AS LAWN-MOWERS in the apiary are favored on page 494. I've tried sheep, horses, and cows. Horses move hives the least of the three. Sheep made as much trouble in that direction as cows. Cows are the dirtiest.

A GERMAN WRITER advises against pavilions or arrangement of bees in several stories, as he finds that, when one of these colonies has a playspell and another commences a playspell after, the bees of the last unite with the first, thus weakening the second.

BURR-COMBS over top-bars can be greatly reduced in all cases where hives have the old-fashioned ⅜-inch space over top-bars. Just nail in the rabbet a strip ⅛ inch thick, and there you are, with your space reduced a third, and burr-combs reduced a good deal more.

Bees gather sweet honey
On days that are soney,
And store it away in the comb;
It seems very foney
That thus they make money
As far o'er the meadows they romb.

A RATHER SAD alternative, as Rambler puts it on page 474. A bee-keeper must keep cross bees, marry a fighting wife, or go crazy. As Rambler is still a bachelor, I guess his bees can't be very good natured, for the brightness of his intellect doesn't seem the least tarnished.

FRIEND ROOT, you wouldn't be so near the foot of the ladder if you had called for reports a month later. The losses kept on late in the spring, and many haven't as many colonies now as they had when they reported. In at least one State a good authority reports only 20 per cent left.

IT MAY BE SAFE now to report how many colonies I have left, as it is past the middle of June, clover is booming, and I don't think any more will die. A little more than half are dead, and some of the living might about as well be. I don't mind the winter, but deliver me from another such spring.

WATCH QUEENS at swarming, and see whether they are not, some of them, just as small as when virgins. I think some have even smaller abdomens than during part of their virginity, and I suspect the thorax remains unchanged in size, and I'm pretty sure it's the thorax that decides whether an excluder will exclude.

DIARRHEA was cured by a correspondent of *A. B. J.*, last winter, he says, in this way. He cleaned the movable bottom-board, and placed under the frames a piece of brown paper on which a few drops of spirits of peppermint had been previously spilled. That seemed to stop the disease for two or three weeks, when the process was repeated.

QUEEN INTRODUCTION, Layens' plan. Take two or three frames from the center of the queenless hive; brush them on the alighting-board; quickly replace the frames; spray the bees on the alighting-board with scented sweetened water; spray also the queen and her attendants, and drop them in the crawling mass that are entering the hive, and they will be as old friends.

HOW EXACTING readers of bee-journals are! In reading a literary magazine, a religous paper, or daily newspaper, they don't expect to read the whole thing through, but each one picks out and reads just what he likes; but in a

bee-journal, if every thing from cover to cover isn't just to the taste of the reader, there's a grumble. But the very thing we don't like may just suit another.

"QUEEN-EXCLUDER," friend Pettit thinks, should be changed to "queen-bar." Exclude is to shut out, and "excluder" is an appropriate name when the device is used to shut bees out of supers, but quite inappropriate when it is used to shut bees in a hive, and more and more it is thus used as an includer. A bar is "any thing which obstructs, hinders, or prevents," so it is appropriate always, and has the merit of brevity. Shall "bar" be the name? What say you, Mr. Editor, and others?

HIVES FOR FARMERS.

WHAT DOOLITTLE ADVISES.

A correspondent writes that he has been induced to take GLEANINGS, and after reading two or three of my articles in the same, and others by Dr. Miller, Manum, etc., he has become interested in bees. He says he is a farmer and wishes me to write an article on the best style of hive, with management of the same, for the farmer who may keep a few colonies of bees. In complying with this request, I would say that all depends upon how "the farmer" intends to keep his bees and what time he expects to spend on them. If he intends only to hive the swarms when they issue, and put on the surplus-boxes when the white clover commences to bloom, paying no other attention to them (which is the way the average farmer tends to the bees), then I would say that the box hive, known as the "Miner Hive," is as good for such a one as any hive in existence. Why I single out the Miner hive from all the other box hives or log gums of the past, is, that, should our farmer ever want to sell his bees, they will bring from fifty cents to one dollar more per hive than they would in any of the others, on account of the provision Mr. Miner made so that the bees nearly, if not quite always, build their combs straight and true, so that, when they come into the possession of the practical bee-master, they are easily transferred to any of the movable-frame hives.

If, on the other hand, the farmer is willing to give his bees the attention which they require, which is far less than he would give one of his hogs or cows, then I would say that nothing short of a good movable-frame hive will be good enough for him. As to which of the frame hives is the best, I would say that much depends on the locality in which we live. If in the South, then the Langstroth or even shallower frames will do as well as any; but if north of latitude 42°, then I would prefer a deeper frame, if the bees are to be wintered on their summer stands. Of course, chaff packing will help the shallow-frame hive; but I believe it is something conceded by all, that a deep frame is preferable for the extreme North. A hive that will bring the colonies out strong in the spring is something worth looking after, where the crop of white honey comes early in the season, as it always does where white clover is the chief source of supply; and the hive which accomplishes this item the most perfectly is the one the farmer, or any other person keeping bees, should look after. Lots of bees in time for the honey-harvest means success to their keeper, while few bees at that time means a failure, no matter how many there may be at all other times. The early management of any hive consists in knowing that the bees have a good queen, plenty of stores, and that they are tucked up warm and secure at the top of the hive. Bees will build up, even if the top of the hive has cracks in it; but all will see that the heat which passes out of these cracks takes so much warmth away from around the cluster, and causes the bees to burn just so much more fuel (honey) to replace the same, only to be carried away again. Therefore it pays well to see that the top of the hive is tight in early spring.

Plenty of stores are needed, for if the bees have to scrimp on account of fears of starvation, not nearly as many bees will be reared as there would be were there so much honey in the hives that the bees could use it lavishly. A hive that has twenty pounds of honey in it on the first day of April will, as a rule, give double the bees at the commencement of the clover harvest, that the one will which has only five pounds, providing the latter does not starve altogether. A good queen is an actual necessity; for, tuck up the hive as well as we may, and give the bees a surplus of stores, to such an extent that they may feel rich, yet if the queen is a poor or failing one, there will be only enough bees raised to keep up the dying population of the hive, resulting in little or no honey to the owner.

Seeing that the bees have the three requisites named above, little more will be needed from the farmer till swarming-time arrives. When the first swarm issues he will mark the date on the hive, so that in eight days he can go in the evening and listen for the piping of the first young queen, which usually hatches some time during the seventh day, where the swarm issues on the sealing of the first queen-cell, as it generally does. If he hears the queen piping, he may know that, if the weather is pleasant, a second swarm will issue the next day, unless thwarted in some way, and also that there is a queen hatched and at liberty in the hive. If he hears this piping, the hive should be opened early the next morning and every queen-cell cut off, which will surely prevent any after-swarm issuing from that hive. To be sure that no queen-cells are missed, it is well to shake the bees off each frame, in front of the hive, so that none are hidden by the bees being so thickly clustered on them.

The surplus-arrangement should be put on each hive as soon as its combs are filled with brood and there is honey coming in from the fields, no matter whether they have swarmed or not, and upon all others as soon as there are bees enough in them so that they can keep up the necessary warmth for brood-rearing, with the surplus-arrangement on. As soon as the sections are filled they are taken off, and more put in their places to the end of the harvest, when no new ones should be put on to become travel-stained and stuck up with propolis, so that the bees will be more likely to finish what are already on. Any farmer can do as much as is here outlined, and I have sometimes seriously questioned whether this will not give any of us as good results as the more frequent manipulation of each hive, which has been insisted upon in the past. G. M. DOOLITTLE.

Borodino, N. Y.

CHESTNUT HONEY.

C. P. COFFIN CLAIMS THAT HIS BEES GATHER IT.

Friend Root:—"Woodchopper," on page 432, is very emphatic in asserting that the common chestnut does not yield honey, but only a small quantity of white pollen. Such is his observation after an experience of 31 years in a chestnut region, his opinion being that, as basswood

and chestnut bloom at the same time, the more showy flowers of the latter get the credit, while, in truth, the honey really comes from the basswood, and only a scantily furnished supply of pollen is the sum total derived by the bees from the long bloom, or "tails," of the chestnut. He asks Mr. Benton, who referred to "chestnut honey" on page 254, to tell us of the variety of chestnut, other than the horse-chestnut, which yields honey.

Perhaps, owing to the peculiar conditions of last year's (1892) honey season I can throw a little light on this question. By way of preface, I will say that the common chestnut is one of our most common trees in this section, where it attains a size and height equaling almost any of our forest-trees, the timber being used for many purposes, and considered particularly valuable for fence-posts and like uses where lasting properties are a desideratum. Throughout the range of pasturage within reach of my apiary, and all through this part of the State, are vast numbers of chestnut-trees which bloom here early in June; and as I write, the whitening top of a magnificent specimen of this tree is in view, though the bloom will not be fully open for some days yet.

Now, as between basswood and chestnut, the trouble will not arise here in deciding to which belongs the credit of a honey-flow, for I have never seen a basswood in this section. We hear of linn, or linden, in parts of the South, but not here. When chestnut is in bloom, most of our early sources of honey have gone out of bloom, and later ones have not come in. Just before chestnut there is, unless honey-dew prevails, a loafing-time among the bees. One of those times, bee-keepers know and dread, if they have put off taking the honey already stored until then, for it is a fight to the finish—tent or no tent—getting that honey.

Now, here comes a puzzle, if chestnut does not yield honey. Just as soon as the trees are white with blossoms the bees begin to hum, and pretty soon they have assumed that frenzied hurry and "get up and go" in leaving the hive, and that peculiar "plumping down" on entering, that tells the tale of "honey coming in," so plainly that "hefting" the hive is an unnecessary task in proving its increasing weight. Meanwhile the apiary and surroundings are redolent of the pungent odor characteristic of chestnut-blossoms — an aroma unmistakable that pervades the atmosphere far and near during their bloom. Not only is this odor particularly strong among the hives, in the air about them, but it is more pronounced on opening them and in the extracting-room, to which the flying bees are attracted so as to be as troublesome as in a dearth of honey.

The conditions of the honey season mentioned were owing, in part, to the succession of freezes in spring which killed or injured the buds and blossoms of trees and plants that furnish our principal honey-flow of April and May. There was no spring crop, the bees barely eking out a living till chestnut-bloom in June, when the only yield of the year was obtained in the shape of surplus, and even that was lighter than usual—winter stores coming later from bitter-weed and fall flowers. This surplus was unmistakably from one source. The only blossoms bees were seen on were chestnut. Hives, extractor, and honey had the odor of that bloom; the honey tasted, when new, of the same flavor so strongly as to be unpalatable; and, even when thick and ripe, and after candying, its characteristic flavor was noticeable. My honey-book of last year's date has this note: "June 15—Honey-flow began June 10th, from chestnut unmistakably, as odor indicates source. Began extracting 17th; crop 468 lbs."

In average years, honey stored just before—possibly a certain amount with—and after chestnut, from other sources, and taken off all at the same time, has not the distinctive flavor so noticeable as that of last year; but I do not remember a year when chestnut was in bloom that the hives did not have the same odor as the chestnut-blossom, and the honey the corresponding flavor if extracted at the time.

Mr. Benton mentions this honey as light in color in Carniola. It is rather darker than our average fall honey here. In the fall it grows thick, and is called "rich," and is much liked by many, and candies with cold weather.

In these particulars it seems to me we ought not to be too certain *we* are right and *somebody else* wrong. A plant or tree may be fruitful, and yield honey in one locality, and refuse to do so in another. Grapes vary in different localities in flavor, though of the same variety; sometimes, even when within a stone's throw of each other, owing to difference in soil. Climate affects color as well as flavor. In Doolittle's notes in the A B C book, he says buckwheat has yielded honey in his locality only five times in 12 years; hence he gave it up as a honey-source.

So it would seem, in summing up, that, while chestnut, perhaps, may yield no honey in Woodchopper's section, it may do so in Carniola; while as to its yield in Mississippi, so sure has it seemed to me as a prolific and unfailing source, that, if I had been asked to name one or more sources of wide extent from which bees, during such bloom, gather honey of distinctive flavor as unmistakable as basswood and white clover north, I should, without hesitation, have named "chestnut" (June) and "bitterweed" (Aug., Sept.), the flavor of both being alone sufficient proofs—the last named disclosing itself in the milk of cows early in spring, when the plant is tender, and eaten by them, as well as in honey from its blossoms later in the year.

Pontotoc, Miss., June 3. C. P. COFFIN.

P. S.—A south breeze bringing the well-known odor, I have just walked over to the trees, and find the blossoms opening rapidly, and the bees already thick upon them, and the lethargic appearance in the apiary changed to one of activity. Inclosed is a sprig. C.

CAN THE BEES CHANGE THE SEX OF AN EGG?

AN INCIDENT THAT SEEMS TO SHOW THAT THEY CAN.

On page 385, near the bottom of the first column, Dr. C. C. Miller says: "Get clearly, then, the idea that an egg that is fertilized as it passes the outlet from the spermatheca will produce a worker or a queen, and one not thus fertilized will produce a drone. No after-treatment can change its sex."

I will not repeat more of said article. I believe Dr. M. to be correct *should we* move worker eggs to drone-cells and *vice versa*; also that a drone egg will always produce a drone under all circumstances, and nothing else. So far as I have observed, and several other bee-keepers with whom I conversed and corresponded on this subject, bees can and will, under certain conditions, change worker eggs to drones.

In 1884 I started in the spring with 20 colonies, mostly poor hybrids and blacks. As the prospects for a good honey crop were favorable and the spring fine, I increased my bees to 80 colonies, nearly all by artificial increase, raising all my queens from two tested queens. The latter

part of April I divided one black colony, taking all eggs and unsealed brood; also all drone brood and larvæ, with the queen, on a new stand; then I went to the hive containing a tested queen to see if I could find a comb with only eggs and young larvæ. Every comb had some larvæ which was too old, except a frame of drawn foundation on which the queen was laying, having filled about two-fifths of the frame in the center. The next day I went to the black and queenless colony, and looked over the combs to see if they had started queen-cells on larvæ I might have overlooked. Then I went to my tested queen and got that new comb which was now pretty well filled with eggs, and gave it to the queenless colony. About five days later I wanted to see how my queen-cells were getting along, when, to my surprise, they had gnawed three holes in it about the size of a fifty-cent piece. Along the edge of each they had several queen-cells, and around these a circle, about one inch wide, of drone-cells with larvæ in them, which hatched in due time into perfect pure Italian drones, the same as in their mother hive. There must be a certain time up to which the bees can remove the spermatozoon from worker eggs; and it is my opinion that this is not over 24 hours after the egg is laid.

I do not want to get in a quarrel with Dr. M.; but if he does not believe me, let him try the experiment for himself. I have given every detail, to let those who are interested in it test it. So far as I am concerned, I am just as sure about it as I know that day follows night and night follows day. I have waited to see whether Doolittle or some of our headlights would give Dr. M. a gentle hauling over the coals for his bold assertions; but so far no one has done so.

Sabinal, Tex. J. A. Schuddemagen.

THOSE OLD BEE-BOOKS.

ANOTHER PEEP AT THE "GOOD OLD TIMES."

The book noticed in our last review was Butler's Feminine Monarchie, published in 1609. Of this work we have two copies, the second one being printed in London in 1673, in the Latin language—the common vehicle for scientific instruction in those days. This rendered the book intelligible to all civilized nations. This need of a universal language is shown in the invention of what is now called Volapük, or universal language—a mode of speech with no irregularities or exceptions. The book in question is 4 x 6 inches, and over 2 inches thick, being very "chunky," and more than four times as thick as the English copy. It is divided into four parts. The first part, devoted to bees, contains 200 pages. The rest of the book is English, and is devoted to gardening. The first division of it is called the "Garden of Eden," containing 300 pages; then follows the "Planter's Manual," 140 pages, winding up with a disquisition on soils, 170 pages. Counting indexes and all, the book has about 850 pages, printed on thick paper. This makes the volume so stout that it reminds one of some folks of whom we say they would "get there sooner by rolling," as their equatorial diameter exceeds the polar.

Whatever may be said of their knowledge of bees, I can't help feeling that "Mr. Hugh Prat, Kt," the author of the "Garden of Eden," could give the gardeners of to-day a good many points in their chosen line, and have some left. His plan of arranging trees, flowers, etc., shows that the English have long been in the front rank in their efforts to make this world beautiful and productive. The "Planter's Manual" was written by Charles Cotton, Esq., and seems to be all one could ask for in that line; in fact, I believe I shall adopt it as a text-book. True, there are some allusions in it to planting things when the moon is right, which seems to be all "moonshine;" but the wisdom of watching the moon seems to be about this: Suppose you plant a tree on the 30th of April, and the moon gets "full" that night. Well, by referring to your almanac it will furnish you an easy means of remembering when the tree was set out. It is a chronological arrangement.

The treatise on soils was written by J. Evelyn, Esq., by order of the Council of the Royal Society, June 24th, 1676. Like the multiplication-table of those days, I can't see but it is just as good as the one we use. Really, I am firmly convinced that the people of to-day would be greatly benefited if they would inquire wisely concerning the things that have been. Gunpowder is spoken of as an ingredient in making good soils. Enough of it will doubtless make things come along fast enough. Our clay lumps here in Medina County certainly need something of the kind to crack them open.

But we are here to examine Butler on bees, and not gardening; but the subjects are so intermingled that it is difficult to separate them. One strange thing we learn from Butler is, that music was written in his day on four lines instead of five as now. How came notes of music in a bee-book? In describing the swarming-note, Butler uses music-notes to represent the sound. The hum of the workers is represented by striking G once and A (first key above) eight times in rapid succession. Just try it once. It doesn't take much practice. Probably the organ would be better than the piano, and the violin still better. If the latter instrument is used, a green hand will produce a more curdling effect. Strike F (above middle C) rapidly some twelve times, and that gives the pitch of the queen. Let me quote a few words:

"She continues the same some four or five semibreves, sounding the end of every note in *C, sol, fa, do;* so that, when they sing together, they sometimes agree in a perfect third; and if you repeat the termination of the bass, sometimes in a diapason (octave). With these tunes answering one another, they go solemnly about the hive to give warning to all the company."

Perhaps Dr. Miller can explain this at the next convention.

One of the most remarkable things I ever read in a book written by a man of Mr. Butler's attainments is the following. It is too good to be lost. I will reduce it to modern spelling:

"A certain simple woman having some stalls of bees which yielded not unto her her desired profit, but did consume and die of the murrain, made her moan to another woman more simple [unskilled] than herself; who gave her counsel to get a consecrated host and put it among them; according to whose advice she went to the priest to receive the host, which, when she had done, she kept it in her mouth; and being coming home again she took it out and put it into one of the hives. Whereupon the murrain ceased, and the honey abounded. The woman, therefore, lifting up the hive at the due time to take out the honey, saw there, most strange to be seen, a chapel built by the bees, with an altar in it, the walls adorned by marvelous skill of architecture, with windows conveniently set in their places; also a door, and a steeple with bells; and the host, being laid upon the altar, the bees, making a sweet noise, flew round about it."

No doubt a bee might have been seen on a little wax stool, leaning back and playing some of Bach's fugues in the key of bee-flat, on a little wax organ, while the wax bells rang a merry

wax chime. Does Mr. Butler relate it as fact? He meets every conceivable objection to it with all the skill of a lawyer. And who shall say the vision was baseless? Quite likely some cells were capped over, and became colored or stained in such a way as to resemble the front of a church, by using the imagination vigorously, just as the stars may be made to represent the outlines of a sugar-bowl, bee-hive, or fanning-mill, at pleasure. As to whether wax bells would ring or not, just hear Mr. Butler's own defense, and be not faithless:

"And if any shall say that those bells, being made of such metal, would give but a weak sound when they were rung to matins, they must consider the parishioners lived not far off. And so I think these captious critics will hold themselves satisfied."

Any thing but a captious person for me.

What a wonderful thing is the human mind when led captive by the imagination, and deprived of some of the most evident truths in nature! How long mankind has been in reaching the present high state of enlightenment! and yet how prone to that which is absurd and inexplicable! It seems strange that men who had such high conceptions of religion as Mr. Butler evinces in many places could have coupled it with the action of a mere insect. But let us not be uncharitable. Those were days of wax tapers and torches, while we live in an age of electricity and steam. The greatest valley of darkness that the human mind has ever enlightened is itself.

In the remaining books which we have to review, we find that much of the superstition drops off, and we seem to be among men more like ourselves. W. P. R.

Medina, June 24.

SELF-HIVERS VS. QUEEN-TRAPS IN CONTROLLING SWARMS.

THE SELF-HIVER PREFERRED.

On page 401 our old friend Henry Alley argues that a queen-trap will catch a swarm as well as a self-hiver. All we have to do is to return the queen to the hive two or three days after the swarm has issued—so he claims.

In a foot-note to a similar article written by Mr. Alley for GLEANINGS (April 1st, pages 257, 274), Mr. E. R. Root says: "The bees, having been thwarted in their efforts to carry out the instinct of nature, remained in the hive, frittered away their time doing nothing, and finally ended up by killing the queen." This was in reference to using queen-traps as advised by Mr. Alley.

Well, it is simply this: With a queen-trap the swarm returns to the old hive, the swarming fever *not* satisfied, and the whole thing will work in nearly every case as described above by Mr. Root. But with a self-hiver that would hive the whole swarm, the case would be entirely different, because then swarming would actually take place, the swarming fever be satisfied, and the swarm go to work with all the vim and energy always displayed by new swarms (at least I think so).

The supers should be put on the hive of the new swarm, and at least part of the brood-combs and young bees also transferred to the new hive, and the whole made a rousing colony.

I am afraid Messrs. Pratt and Root have made a mistake in placing the new hive under the old one. Lifting the old hive, and perhaps two or three supers, or even turning them, as they say, "cat-a-cornered," to ascertain which hives have been swarming, is too much work. Better have the hiver in front, and only a cover to lift. I somewhat suspect that they have done it, and also adopted a peculiar queen-escape instead of a cone, in order to avoid infringing on Mr. Alley's queen-trap patent, but I don't know positively.

In case the self-hiver and new hive should be left under the old hive for several weeks or months, the probability is that the work in the sections would cease, and the bees fill both new and old hives, with or without swarming. If working for comb honey, our aim would be defeated; if extracted honey is the object, better put the two hives one upon the other, without any self-hiver or honey-board; or, better still, adopt a large hive, such as is used by the Dadants and most of the European apiarists.

Knoxville, Tenn. ADRIAN GETAZ.

(*American Bee-Journal.*)

[The first self-hiver that Mr. Pratt devised was gotten up on the horizontal plan—that is, one hive was in front of the other; but it was a little difficult to level up two hives exactly in line so the connection between the two would be absolutely bee-tight. He later devised a method whereby the hive to receive the swarm would be below the parent colony. But as this brings up the question of lifting the upper hive to see whether the swarm has gone below, there is a possibility that the first sort of hiver would be preferable, and there is no reason why the apiarist could not use this plan if he prefers. In regard to the queen-trap answering the purpose of a hiver, Mr. Getaz agrees with us exactly—that is, it does not satisfy the desire for swarming, *unless* the swarm is attended to immediately, or shortly after the issue of the swarm. In that case it is a long way from being *automatic*, and goes but little further than the old reliable plan practiced by so many bee-keepers, of clipping the queen to prevent the escape of the swarm. Either the trap or clipped queen requires very soon the attention of the apiarist. Pratt's automatic hiver, after it is once attached to the hive, may be left, and nothing very serious will happen if it is not attended to in ten days or even two weeks after the issue of the swarm and its return to the new hive.]

RAMBLE NO. 87.

HARRY'S VISIT.

"Good afternoon, Mr. Rambler. Well, well! Is not that a hard way to travel—on 'shank's horses,' as the old saying is? Why don't you get a horse or bicycle?"

"Why, my friend, it's the easiest thing in the world. Just see here; it is simply the putting of one foot before the other, just one foot before the other, and persist in it, and you will get over much ground in a day. Now, sir, the trouble with you and other people is that you fail to persist, and look around for a wagon to get into. Why, sir, I have known young healthy men to hang around a village store for a couple of hours or more, wasting valuable time waiting for a chance to ride a mile or so, when the simple putting of one foot before the other would have landed them home, with much benefit to their muscles and mind also. Yes, sir, the simple putting of one foot before the other has resulted in carrying me over many a five miles, and giving health and muscular development. See here, now, Mr. Squid," said I, raising my trousers legs, "just see the development of my muscles; you can not beat that."

Mr. S. raised his trousers just a little, and the non-development was so obvious that they

were soon dropped. Mr. S. turned away with a wicked leer in his eyes, and tauntingly remarked, "Yes, brag about the size of your calves; but you couldn't blow up a lung-tester, could you?"

That remark sort o' riled me; and as he slid around the corner of the house I shouted, "Bring on your old lung-tester; if I can't blow it up I can kick it up."

I picked up my various traps and proceeded to put one foot before the other until my cabin was reached, and I mentally resolved to exercise my kicking powers on the next lung-tester I came to.

The next episode in my recent life was a very pleasant call from my friend Harry (in the name H. E. Wilder the H stands for Harry).

"Why, good morning, friend Harry; step in and sit down. I have one chair and a bee-hive to sit upon. You can take your choice. You see, we don't put on much style. Take an orange; or, won't you have a glass of lemonade? No sticks in it, mind you, on this ranch."

"Well, Rambler, I don't care if I do take a little ade; and you know that I do not like sticks in mine any more than you do in yours. Hello! got a typewriter, have you? Where did you find that?"

FOREIGN FINGERING.

"Oh, that is one of those Odell machines; and friend Hutchinson, of the *Review*, sent it to me, and I am just learning how to run it. I find that, if I put it down on this box and get a general bird's-eye view of it, it works much better. Our friend Pryal, of Oakland, as soon as he learned that I had a writer, sent me a whole grist of directions; said that I must not get on to it with my feet and try to write with my toes; and then he further insinuated and said, 'If you wear false teeth, go slow at first or you will rattle them all out on the table,' and wound up by advising me to take lessons of a lady teacher, just as he did, and added much about romantic results, harmony, felicity, etc. Of course, you met Mr. Pryal at the convention. Oh! he impressed you as a very suave and dignified gentleman, did he? Well, Harry, did you ever see a Tennessee moonshiner? You didn't? neither did I; but I have some ideas of them."

"Mr. Rambler, I see that you have a sign up on the borders of your grounds, 'Danger to horses and women.' Have you been troubled much with those quadrupeds and bipeds?"

"Well, Harry, you see my cabin is right up here among the bees; and people riding along the trail sometimes take a sudden notion that they want some honey, or wish to inquire the way to Riverside; and the first I know they are up here among the bees, where themselves and horses are in danger of getting stung. Not wishing to pay for a dead mustang I put up the sign, 'Danger to horses;' soon after, a man and young lady drove up to the sign, and, instead of the man getting out, he sat on his cart and sent the woman past the danger-point. The bees began to hover around the posies on her hat, and at about every three steps she would give a little shriek, and say, 'Oh! I am afraid of them.' The little woman was of a nervous temperament; and, a bee hovering too near her ear, she made a desperate pass at it and hit her ear-ring. In her nervousness she thought the dangler from the ring was a bee, and she paddled it for all it was worth, and sent it flying into the bushes, and then discovered that she had lost her ear-ring. I sent her back to the big man in the wagon, and hunted in the grass for the jewel, and at length found a sort of glass object which I presume was very valuable. Then, after all said and done, I had no honey to sell, for I had not commenced to extract. They sadly departed, and I dittoed to my cabin, and straightway added *women* to my sign. The next time that couple came, the man had evidently had a course of repentance; and, leaving the woman in the wagon, he came up with a bold front; and the first pass a bee made at him it got in its fine work. It lightened my labors all day to think how neatly a bee can take the starch out of a great big man when the occasion demands it. Well, Harry, we have had a very pleasant chat. I must now go to extracting honey. I can not sit still long now. You know I want to run off enough to make six tons this week. Come along and I will show you how I do it."

"Hello, Rambler! you have one of those new Crane smokers, have you? Well, it has a crane's neck to it, anyway. How do you like it?"

"I like it very well; it has a fine blast, burns fuel that my old smoker would not burn, and holds out well; but I have one fault to find with it—that nozzle is lined with sheet iron, and it seems to hold the heat more than a single thickness of tin, and it makes a hot thing to handle. I should think that, if asbestos is applied anywhere, it should be applied around that nozzle. A good thickness here might make it more comfortable to handle. You see, it works easily. Now, Harry, we will go out into the apiary. You carry the smoker and I will run the wheelbarrow. Bees going up your sleeves? they—well, grin and bear it, or bandage your wrists with a white strip of cloth, as I do. I do my ankles ditto sometimes."

"See here, Rambler; what is this thing on these two hives, sort o' tying them together like the galling bands of matrimony?"

"That is the new and famous Langdon swarm-preventer. The inventor sent me one, desiring me to give it a trial. Colony No. 1 was

all ready to swarm, and the application of the device and the running of all of the working force into hive No. 2 prevented the issuing of the swarm, and kept them all at work; but somehow both turned up queenless in a few days. The colonies evidently had old queens, and wanted to supersede them. The principle is all right; and for a comb-honey apiary I have no doubt it will be a desirable invention; but in an apiary like this, worked for extracted honey with two supers each, there is but little desire to swarm, and a swarm-preventer would be useless."

"I see you have the queen-excluders and Porter's bee-escapes in full force here. How do they work this year?"

"Well, Harry, they work nicely except when the queen gets above the excluder, which they will do sometimes; and I think it is the fault of the zinc, for it is some of the first manufacture. You know a cat will crawl through any hole that she can get her head through; so with a queen—she will go through any hole that her thorax will go through. The first round of extracting went very nicely; those third supers, with the excluders below, came off every time with the combs free from bees; but now I am restricting the queen to the lower hive; and in making this change I find much brood in the second story, and the brush has to play its part more or less. I hope to get these two supers filled twice with honey before the season closes. I think these supers are too deep to work to good advantage under this system. I think that a Heddon case would work better. The next great invention, Harry, is in connection with the shallow super, with our electric un-

capping-machine, and a proper extractor. We will put our whole super into the extractor, and throw out the honey at once, and handle not a frame—*sabe?*"

"Why, Rambler, what a visionary fellow you are! I believe you will soon imagine that you can get the bees to bring the honey and deposit it right in the tank."

"Perhaps, Harry; but remember that, if it were not for us visionary fellows—A. I. Root, Dr. Miller, and I—you would plod along in the old rut. But you have been making that extractor hum for an hour, and you must by this time have a good appetite. Let's go to dinner. What have I got for dinner? Well, I am so rushed these days that I can't stop to heat up, cook, and wash dishes more than once a day, and that is in the morning; so I'll give you what I have—cold potatoes, cold pancakes, canned beef, cold coffee, etc."

"Well, hunger makes a good cook," added Harry, as he arose from our humble repast; "but I believe I shall have to be going."

"Yes, I suppose you will have to go and see your family. Well, *adios*."

"*Adios*." RAMBLER.

CLIPPING QUEENS' WINGS.

COVERS FOR BEE-HIVES; HOW TO FIND A QUEEN, AND HOW TO CLIP HER WINGS WITHOUT HER KNOWING IT.

The first determination in the clipping of queens is the season or time of the season. When a farmer has 200 acres of grain to cut with one machine he watches it closely, and begins when it is a little green, and finishes when it is very ripe. If he should not begin until the earliest was thoroughly ripe, the last would be so "dead ripe" that most of it would shell out so as to be hardly worth the harvesting. One machine is able to cut about 10 acres a day, and 20 days' time will extend from the beginning of the ripening to the over-ripeness of grain. It is no truer of grain than of clipping the queens at the right season, which comes when there are two or three combs full of brood and patches of brood in three or four other combs. Queens may be clipped when there are only two or three combs of brood; but this would come earlier in the spring, when the warm hours of the day are few and the mornings and evenings are cold. The colonies being low spirited at this time, queens are quite apt to be "balled," especially if the queen has been handled or frightened.

Then it is just as necessary to avoid letting the season get too far advanced, as then seven or eight combs would be filled full of brood, making large areas to search in order to find queens; the brood would also extend around the lower and side edges of the combs, where queens would be apt to hide and be hard to see; there are more bees in our way, and, what is still more, when brood is so plentiful the queen seems to be less interested in her work, and is more liable to run from comb to comb, or even run off the combs entirely on to the side of the hive. When there are not more than two or three combs containing brood in the hive it is rarely that the queen will leave it; but if several combs are full of brood, the first desire of the queen seems to be to get off from them at once. Thus it may be inferred that the most propitious time is after the colonies begin to build up, and before they develop very considerable strength; and this period probably does not exceed twenty days. Some colonies would be in the best condition sooner than others, and it would require more or less than twenty days, according to the number of queens and skill of the operator.

Next after the time comes the hive. Some may think one hive as good as another; but this rule is varied. It wants a hive which we can get open and find the queen at her regular work undisturbed; and the first thing encountered is the cover. The latter should be flexible, so as to be removed gradually to prevent jars or snaps. A telescopic cover of lumber, and the frames covered with enamel cloth, accomplishes this; but as enamel cloth is eaten and destroyed by the bees it is too much trouble to keep it renewed; and it is also best to have a ⅜ space between the cover and top-bars, to avoid propolis. A solid board is propolized around the edges, and nearly always comes up snapping. I have watched many removing the flat board covers, and they stand squarely behind the hive and grasp the cover at each rear corner, and pull straight upward steadily. When the propolis breaks, the cover is raised suddenly, and often jumps quite out of their

hands. In thus proceeding, the motion is no less pronounced than is the shock to the hive and inmates. It would be a little better to raise one corner first, and, as we pry up with one hand, push down with the other; but even then a stiff cover must make some report.

The most satisfactory cover I have found is made by cleating together three or four pieces about one-fourth inch in thickness, using three cleats. The cleats hold the light lumber straight, as it has not strength to warp like thicker boards. It allows moisture to pass through them easily, and is quick to become dry again. Of course, this thin light wood could stand very little rain and sun, so I put on another cover, of tin. The difficulty with tin lying flat on the ordinary board covers is, that moisture and sweat from the bees collects on the inside and rusts the tin and rots the wood badly. In this thin cover, the cleats are on the upper side—one on each end and one across the center; and when the tin is put on it leaves an air-space of the depth of the thickness of the cleats. Then the tin is tacked to the sides but not at the ends, so that the air and moisture can escape. This cover can be removed with the least jar by prying up the corner; and its bending disposition extends gradually across the hive.

To skillfully hunt out queens, instead of looking for a bee that is a little longer than any other of the multitude, we take in the comb at a glance, and locate the queen by a little circular cluster of bees regularly formed around a central vacant spot, upon which is one bee alone. A jar or snap in removing the cover or lifting the frames dispels this regularity, some bees going on the war-path while the rest rush into clusters, with the queen hiding promiscuously among them with about as much disorder as it would make for a man to enter a ballroom and exclaim at the top of his voice that the building was on fire.

If the colony has brood in five or six combs, and it is earlier than eleven o'clock in the day, we may expect the queen to be on one of the two middle combs. If there are six or seven combs of brood, then it should include the three middle combs. After noon, if the sun shines warmly, she is usually nearly outside the brood-circle and may step over on to an unoccupied comb; so at this time of the day I would not examine the center combs first. By these observances the queen may be found on the first comb examined, one-third of the time, and the second comb would include one-half of the times.

If the hive was opened and the frames handled accordingly, we shall find the queen busily engaged at inspecting cells and laying eggs. At first the light does not disturb her; but in a moment or two she will become disturbed and start off on a rambling tour, so what we do should be done quickly.

Use the small scissors from the counter store, holding them about half open; follow the point along three-fourths of an inch, directly over the queen wherever she moves. Soon she will put her head into a cell and keep it there about two seconds. At the same time her wings rise up at about 25 degrees, when one outside wing may be caught, and clipped as soon as caught. This is the easiest, quickest, and best way. One-half of the time is usually spent in catching. Now, you may try this and fail; but the cause of failure is generally because the scissors are held three inches above the queen; then when she stops you move the scissors to make the clip. She starts for another cell just in time to save a wing. Your sudden movement attracts the attention of an attendant bee, which flies up and alights on the points of the scissors. Becoming somewhat vexed at this you open and shut the scissors three or four times to cut her legs off, and finally thrust the bee to the ground, with a full-arm movement. This imparts a tremulous motion to the comb, which is held in the left hand; the queen is disturbed; and when the scissors return to business you will probably try the difficult, uncertain, and dangerous plan of catching a wing as the queen runs, and finally conclude that the plan works better in theory than in practice.

It is not only best to open hives quietly and handle frames carefully in finding queens, but it is a good practice for all the time; and with the really expert apiarist it becomes natural and customary. In the busiest part of the day there are only a few bees that remain as guards; and molestation of the hive is so little expected that they hardly recognize an intruder when he comes, so there is no use to smoke the sentinels at the entrance; and the smell of smoke to a bee or two here and there as the cover is raised is an abundance. Even if the tops of the frames and hive are covered with bees, there may not be a shadow of reason to use smoke on them; but if there is a necessity for smoke, only a bee or two may need it, and those may be distinguished by the manner in which they hold their wings or move along. Such bees should not be smoked, because other bees near them will be easily scared, and go down between the combs, and set every thing in a panic; so I hold the smoker-nozzle close enough to the dangerous ones to let them know I can stand a battle with them if necessary, and this changes their threatening manners.

Always go prepared with smoker at full blast, scissors in the right vest pocket, and veil on. Kneel on the left knee at the side of the hive on which the sun shines; holding the smoker in the right hand, remove the cover with the left, very slowly at first, and use no smoke unless many bees dart out from under it, and then the smoke should not be driven under the cover, but it should be directed against the hive below the cover so that only those bees which fly out will smell it. Sunlight is nearly as good as smoke. When the cover is high enough, set the smoker down and lean forward, and quickly decide on which comb the queen is most likely to be; and while the left hand carries the cover to the left, and places it upside down on the ground, loosen the particular frame with the right. If one end of the frame is moved backward and forward and upward when the left hand returns to the other end, it will be ready to be immediately raised out of the hive. While it is coming up, search the side toward you. When the bottom-bar has cleared the other frames and hive, you should be ready for the other side by moving the right hand inward toward you, and the left hand far out, causing the comb to move as if the frame were on a pivot in the center of the bottom-bar. This gives a slanting view of that side, which is always the best view; do not stop the comb to look it over, but glance at it while it is given to the right or left hand, and is being set on end in front of the entrance, or against the farther side of the hive.

While one hand disposes of this frame, the other goes to loosen another. In clipping I hold the frame by one projecting arm in the left hand, and rest the opposite corner on some part of the hive or on my knee to keep it steady. One-half of the queens I clip never know any thing has happened, and I take off the most of the gauze of one outside wing. When I work facing the sun I lean forward and examine the farther side of the comb first, which will be toward the sun, as it is lifted out.

In a description the operation appears as if

there were several separate movements; but in practice they are all combined or continued as one move, as neither hand comes to a standstill anywhere, and each is engaged in a different manipulation. C. W. DAYTON.

Pasadena, Cal., June 10.

GETTING RID OF LAYING WORKERS "PULLED QUEENS," ETC.

DR. C. C. MILLER TELLS US HOW TO AVOID THE TROUBLE TO A GREAT EXTENT.

A correspondent relates to me his tribulations with fertile workers, in which the troublesome pests came out ahead. He first gave them a ride on a wheelbarrow, and dumped them on the ground 20 rods away from the apiary, hoping the bees would desert the laying workers and come back to the old stand, on which he had placed a new hive containing frames of brood. But they didn't return. They just lay on the ground in a pile till nearly dark. I suspect that, if they had been left long enough, they might have returned; and I further suspect that the only effect of their rough ride on the wheelbarrow was to make them lie there on the ground longer than they otherwise would have done.

Toward dark he put the hive by them; they ran in, and he placed them on a new stand. Next day most of them returned to the old stand—pretty clear proof that if he had left them on the ground, they would have gone back to the old stand. Then he introduced a laying queen by the candy plan. The bees ate the candy and killed the queen in the cage. A virgin queen introduced the same way probably met a similar fate, as she could not afterward be found.

He now wants to know about the plan of giving them a pulled queen, and asks how old a queen-cell must be when the queen is ready to pull out, and how to tell by the looks of the cell when it is old enough, providing he knows nothing as to when it was started.

It is well known that a queen just hatched will be kindly received almost anywhere, although if a laying queen is present the young queen may be killed as she becomes older. If, however, instead of a laying queen being present, there are laying workers, I think the bees transfer their affections from the laying workers to the young queen. Instead of taking a queen that has just hatched, it seems to work equally well to use a queen that is just ready to hatch, or perhaps 24 hours in advance of the time when it would emerge of its own accord. How to tell by the looks of the cell when the queen is ready to pull is something beyond me. I can tell about it only after I have pulled her; and as that is usually at a time in the year when queen-cells are very plentiful, it matters little if a number are pulled open only to find the young queens too immature to use. Yet a very soft, white-looking queen may be used, if she is only mature enough to crawl about. If you're not sure about it, it will do no harm to put in two or three.

Queen-cells are not plentiful in the spring, and I don't believe I would fool with bees having fertile workers at that time of the year trying to save them. There are plenty of colonies that are short enough of bees to be benefited by having additional bees given them. So I would divide the bees around among colonies needing them, giving one or two frames to each. If given at a time when blossoms are yielding, there is not likely to be any fighting. But these bees are not likely to be of any very great value, because so old. If the whole colony were united with a weaker colony having a queen, the queen might be killed. C. C. MILLER.

Marengo, Ill.

WINTERING.

AN UNSOLVED PROBLEM.

GLEANINGS for June 1st is just received, and I read with much interest the article on cellar wintering, by friend Taylor. I consider this the most important subject connected with the business of honey production, especially in this northern latitude. With this problem once solved the production of honey would be placed on a solid basis. If I could only winter my bees successfully every winter I would ask for no better business than raising honey, even in Iowa; but I must confess I have had to buy bees several times to keep up my stock. This is not as it should be; and as I have a love for the business, and am depending on the production of honey for bread and butter, I am very much interested in the wintering problem. I have had several years' experience in cellar wintering, and last winter I had bees in three different cellars. In cellar No. 1, which is a cave on the Doolittle plan, I put 62 stands. About half had sealed covers, with bottoms removed *a la* Boardman. Half of the rest had top ventilation by slightly raising the cover, and fast bottoms, and the rest had queen-excluders on top, covered with cotton cloth, cover removed, and fast bottom. All wintered equally well so far as I could see. I lost two by starvation; put them in house-apiary Mar. 15, since which I have lost 15 more from the failure of queens; and I am convinced that many of the spring losses are caused by old or worthless queens.

In cellar No. 2, which is my home cellar, I had 11 stands, part with sealed covers and no bottom, and part with nothing but queen-excluding honey-boards on top; all wintered perfectly; commenced rearing brood in December. I examined them several times, and all are strong to-day except one which lost its queen. This cellar was very warm.

Cellar No. 3 is cemented on the bottom; studded, and plastered sides and overhead, and contained 30 stands, 21 of which had two or three thicknesses of burlap and carpet, daubed with bee-glue, and a heavy chaff cushion in the super, cover removed. These all wintered perfectly, and are strong to-day except one which was robbed, and two which had poor queens, and are weak. The other nine had slatted honey-boards on the cover, with three or four thicknesses of cotton cloth, new, without any propolis, and cover removed. Five of these died, and two are now weak for this time of year. This cellar was very cold, and I am sorry I did ont use a thermometer.

Fifty colonies were wintered in ten-frame chaff hives, with several thicknesses of heavy cloths covered with propolis, and a heavy chaff cushion or loose chaff on top, and sticks laid across the center of the frames to form a passage over the tops of frames in severe weather; and I consider this important. Of these, 47 are alive and in good condition; and permit me to say that these chaff hives have wintered successfully in this same yard for 12 years.

The above, as well as my former experience, proves to me that there can be no fixed rules for cellar wintering. We must be governed by the conditions of the cellar. A system that is a success in one cellar might be a total failure in another. J. E. HAND.

Eldora, Iowa, June 3.

MUSHROOMS.

AN INTERESTING ACCOUNT CONCERNING THEM, TRANSLATED BY BALDENSPERGER.

Mr. Root:—On page 314, April 15, Mr. Grainger and you discuss mushroom culture; and right here it would interest you, and probably many friends interested in that industry, or in gardening, to read that ants have been discovered that really grow mushrooms. I find in a German newspaper the following, which I translate. It is headed—

ANTS AS MUSHROOM-GROWERS.

Many naturalists, who have traveled through tropical South America, have recorded the curious habits of leaf-cutter ants, or carrier-ants. These little creatures attack by myriads trees and bushes, and cut with their mandibles round pieces of the leaves, and may be seen in long files, carrying these bits toward their nests, passing, by self-made paths, leaves, branches, and sometimes even passing over natural bridges to cross the water. Till recently it was not known what the ants did with these morsels of leaves, some of them weighing nine or ten times as much as the bearer. Some believed that they used them as food directly. Some naturalists believed they were used in lining their underground nests; but against this last supposition facts spoke, for the leaves were never found in the nests, no matter what quantity they carried home. Thomas Belt conjectured, in his famous book, "The Naturalist in Nicaragua," that those leaves were used as manure in the cultivation of a small mushroom on which they live; consequently these ants are mushroom-growers. Belt was a very keen observer, but his conjectures met with many doubts, and he himself calls them "extraordinary and unexpected." A German, Dr. Alfred Möller, sent to Brazil by the Berlin Academy, to study mushrooms, finally solved the difficulty. In the 6th number of Prof. Schimper's Botanical Communications from the Tropics it appears that Mr. Belt's conjectures were altogether true. The results of these observations are as follows:

The nests of the training-ants (*Atta*) are mostly built in natural hollows under the surface of the ground, which are probably enlarged by the ants. If such hollows are not covered by old logs or stones, the ants cover them with a thick pile of leaves and bits of branches. *Atta coronata* hollows out its lodgings in hard clay soil, while *Atta hystris* and *Atta coronata* prefer to live in forests. A third kind, *Atta discigera*, prefers the neighborhood of man. Thus, Dr. Möller found a nest beneath the stone stairs of the house which he occupied, near his renowned old uncle, Dr. Fr. Müller, in Blumenau (station Catarina), and found it was impossible to dislodge the ants without breaking up the stairs. But in whatever position they have their nests, in all of them is found a loose, soft, gray mass, like a big sponge, with different-sized excavations, in which ants are always found, as well as eggs, larvæ, and pupæ, strewn about. Möller calls this mass the mushroom-garden — the term used by the American naturalist McCook. This substance is composed of many small plots of yellowish-brown to black in color, held together, as observed under the microscope, by white fungus threads; also, by the microscope, the particles of the leaves are seen in these plots. On the surface of this mushroom-garden can be seen numerous white points, which, seen under the microscope, are recognized as many fungus-thread ends coupled together. Möller calls these points "kohlrabi heaplets" (kohlrabihäufchen), and says they are the principal or only food of the ants. They are very careful about their mushroom-gardens; and if a piece of it is taken out by ants, larvæ, or pupæ, and put beside the nest, the ants immediately carry back their brood and pick up every particle of the garden which may have fallen off in taking it out. Möller also confirms Belt's account, that the ants take with them every bit when changing their domiciles.

In order to observe their ways, Möller kept these ants in confinement. He found that they died of hunger, without their garden, after eight to fourteen days, even if they have such leaves as they seem to prefer; but if a piece of their garden is brought with them, and put under a glass cover, they first begin repairing the garden, and carry away every bit of uncleanness from it.

In less than 12 hours the work is done, and from time to time the ants carry out such particles as are sucked up by the mushrooms, and produce no more; and if there is no new stuff the garden withers by degrees, and the ants die after eight to fourteen days. Möller could well observe how lavishly the ants devoured their vegetables. The ant seizes such a "heaplet" in its jaws and plucks it out; then turns it round and round by the help of its fore feet, while the antennæ continually touch the food. The ant sucks, sips, and pulls the kohlrabi till all gradually disappears in its mouth.

To form the above-named pellets, the ant cuts a morsel of leaf, and chews and kneads with jaws and feet till a small white ball is formed, which is then adapted to some place in the building. Möller found that particles of leaves built in in the morning were already drawn through by fungus threads in the afternoon of the same day. It is very remarkable that no other mushrooms grow in those nests. In bringing in the leaves, all kinds of fungus threads must be imported, especially the common mold form, where they can thrive best. But he never found any but that one kind, of kohlrabi heaplets, which he took and cultivated apart. He got only pure kinds, and no bacteria appeared. This wonderful cleanliness is attributable only to continual feeding. Such a garden, rid of ants, is soon covered with fungus threads; 24 hours after beginning, these fungus threads grow up in the kohlrabi heaplets, which soon lose the protoplasm they contain, and wither. The ants have, therefore, the greatest interest in preventing those air-threads; and this is another work which falls to the task of those little creatures. If only a few ants are left on such a garden, it may be observed with what efforts they keep back the air-threads coming up. If too few ants, some air-threads gain footing here and there, and by and by the ants are obliged to retreat before the ever advancing fungus forest, which advances with such rapidity that the poor haunted ants, notwithstanding their untiring efforts to keep it down, are obliged to flee from their own work.

The close study of this mushroom, where several neuter forms (*Conidiæ*) appear, showed that all nests of the *Atta* species contained the same. It is a leaf-fungus, seldom showing the caplike body into which the higher kinds develop, and have been termed, provisionally, by the discoverer, *Rozites gongylophora*.

Besides the leaf-cutter ants, Möller says other ants also make gardens—the hair-ants (*Apterostigma*) and the hunchback-ants (*Cyphomyrmæ*) for example. These ants do not take leaves for their use, but decayed wood. Each kind of fungus differs from that of the leaf-cutter ants, and are not accepted by them as food. [Signed] J. Mœwes.

The caplike body is botanically termed the "pileus." Ph. J. Baldensperger.

Nice, France.

JAKE SMITH'S LETTER.

THE MEETIN'.

MR *A. I. Gleenings—deer Sir:*—Since I rote yu last, things has cum to a climax into our meeting house. A church court cum and sot onto the case, and Sok away our preecher, and made the church pay him $200 extra. He preached a fairwell sermon that was fool of lovin kindness, tellin us to be good to the next preecher we got, and prayed for grate blessins onto the church. He's a good man if ever they was 1. Lots of them cride at the thot of givin up him and Missus Bond.

In a fue days we had a bizness meetin, and Welder eggzorted evry buddy to stand shoalder to shoalder and work for the good of the church, and he seemed to be in wonderfool good yumer. When I got a chants to say sumthin I got up and spoke, and sez I:

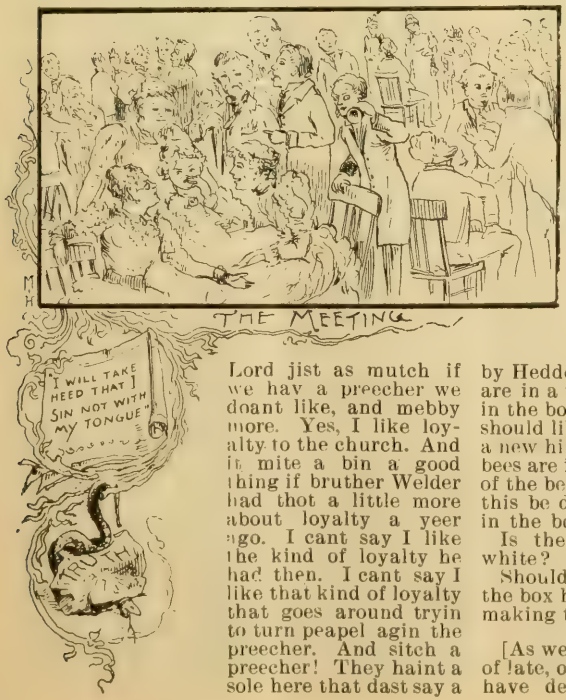
"Ime rite glad to see sitch a spirit of loyalty to the church. I wish they was more of it. I wish it was a little more reglar. I beleave in bein loyal to the church all the year round, whether it's a preecher I like or not. When I joined the church I diddent join no preecher, but I joined the church, and I doant beleave in stayin away from meetin or prayer-meetin jist becaws I doant like the preecher. I doant cum to prayer-meetin to pray to the preecher, but to the Lord; and I beleave we need to pray to the Lord jist as mutch if we hav a preecher we doant like, and mebby more. Yes, I like loyalty to the church. And it mite a bin a good thing if bruther Welder had thot a little more about loyalty a yeer ago. I cant say I like the kind of loyalty he had then. I cant say I like that kind of loyalty that goes around tryin to turn peapel agin the preecher. And sitch a preecher! They haint a sole here that dast say a word agin him. And if bruther Welder had counted up the number of pocket hangkachers peapel was a cryin into when Mr. Bond preeched the fairwell sermon he wood hardly think that evry buddy was agin him excep me and a fue under my influents.

"I beleave in standin shoalder to shoalder," sez I, "but if thade a bin a little more of the shoalder-to-shoalder bizness when this trubble 1st begun it wood a bin a good thing. And I beleave in peas and harmunny too, but I doant beleave in hearin peapel tock about peas and harmunny, and all the time thare a goin around a sturrin up strife.

"And now," sez I, "I spose in the Lord's oan good time heal send us another preecher. Mebby heal be as good as the last, and mebby he woont. But whatever he may be, I propose to stand by him jist as long as he's my paster. And I want all the members to do the same. Doant let nobuddy cum around a tockin agin him to you. Why, if the angle Gaberell himself was our preecher, and sumbuddy went a sneakin around a whisperin to this 1 and that 1 that sum was dissatisfide with Gaberell, and for the sake of peas we must give him up, it woodent be no time till half the weak-headed fools wood see sum failins into Gaberell, and sum with weak backbones wood think we must giv him up for the sake of havin peas. I doant beleave in sitch a unpeasable sort of peas. And I doant beleave in givin up to the rong for the sake of peas. It haint to be all peas into this life. We offen sing, shure I must fite if I wood rain. And now all Ive got to say is this—stand shoalder to shoalder, and the way to stand shoalder to shoalder is to stand by your preecher, in peas if you can; but if you have to fite for it, still stand by your preecher; threw thick and thin, stand by your preecher."

JAKE SMITH.

The End.



QUESTIONS ANSWERED.

HOW TO PUT FOUNDATION IN BROOD-FRAMES; HEDDON'S SHORT WAY OF TRANSFERRING.

Order 20,957 came in good condition, and I am perfectly satisfied, especially with the foundation, which was much better than the sample. The Hoffman frame is a daisy; but don't you think the foundation could be fastened easier if a groove were cut in the place of the comb-guide, large enough to receive the edge of the foundation? then take a small brush and apply a little wax to hold it firmly in place. This brings the foundation exactly in the center.

I have transferred a swarm of bees by Heddon's method. Two-thirds of the bees are in a new Dovetailed hive, and the rest are in the box hive. Now, at the end of 21 days I should like to drum them out and put them into a new hive—not the same hive that the other bees are in, thus making two distinct colonies of the bees which were in the old box hive. Can this be done? Will not the bees that are left in the box hive rear a queen after 16 days?

Is there any objection to painting hives white?

Should the remaining third of the bees left in the box hive be left any longer than 21 days in making two swarms of them? P. R.

[As we have received a good many inquiries of late, of a character similar to the above, we have decided to answer them all through

GLEANINGS. Referring to the first question of our correspondent, as to whether it would be easier to put the foundation in a groove than by the way recommended in our catalogue, we say no; decidedly no. There is not the least difficulty at all in fixing the foundation to the top-bar with the Hambaugh or Daisy foundation fastener.

As to the second question, we would say that two colonies can be made, when preferred by the Heddon short way of transferring. Yes, the bees will be likely to raise another queen in the box hive; but she can be either killed when drumming out, or allowed to supersede the old queen if she can.

White is the best color to paint hives. We formerly recommended, and have used, up to quite recently, a straw-color paint made of white lead and yellow ocher; but we find that even the slightest shade of dark draws quite perceptibly more heat from the sun. During these very hot days we observe that the covers painted white feel very comfortable to the hand. Others, of a light straw color, are decidedly hot to the hand. We now recommend a first coat of pure white lead. Do not let anybody delude you by saying that pure lead is too expensive, and that cheaper paints will do just as well for a primer. We find that pure lead, even at more than twice the price of the cheap stuff, is cheaper, because it goes more than twice as far as paint made up of barytes, lime, chalk, and different earthy matters. For a second coat we would recommend putting in a little pure zinc—say about 33 per cent. This prevents the white lead from chalking, and really makes it more durable.

As to the last question, we may say that bees may be left longer than 21 days in the box hive, if desired; but nothing would be gained, and something would be lost during the honey-flow, because the bees will be filling up these old crooked good-for-nothing combs.]

THE GOVERNMENT AND THE LIQUOR-BUSINESS.

A FEW STARTLING TRUTHS THAT PERSIST IN STARING US IN THE FACE IN SPITE OF US.

Friend Root:—May I be allowed a few words of comment on the article on page 446 of GLEANINGS for June 1st, from Mr. Julius Tomlinson? His argument, in brief, as I understand it, is this: Since the appetite for strong drink is a natural craving, which always has existed and always will exist, and since it can not be eradicated, the means of gratifying it should be restricted as much as may be by taxation and other ways; therefore the government, needing revenue in order to its maintenance, has a perfect right to tax the liquor-traffic and to collect that tax by any means in its power.

Let me apply this line of argument to two other evils, and see if we can not prove its weakness:

Harlotry has existed from time immemorial, and, so far as we are able to judge, it always will exist. We can not eradicate the propensity from which it springs, therefore let us regulate it by taxation. It would be a very easy thing for the government to derive a great and constant revenue from this source; but would friend Tomlinson think it wise for our government to pass laws permitting houses of prostitution to exist for a price?

The gambling propensity is probably as old as Adam. To gain riches without effort, men have always been willing to take desperate chances. The gambling propensity is inherent in human nature, and probably never can be eradicated; why not, then, place it under the supervision of the State, and make it a source of revenue. We have the Lousiana Lottery as an example of how easy a thing it would be for the government to derive a great and easily collectable revenue from the vice of gambling.

For nearly 25 years the State of Lousiana, though her legislators, gave this lottery the right to exist and ply its nefarious business, to the shame of the State and the degradation of the people; and when lately it became necessary to renew its charter it sought to bribe the consciences of the people by an offer of a million and a quarter dollars a year for a new 25-year charter.

We all remember what a storm of indignation arose from one end of the country to the other against those who favored the lottery; how press and pulpit teemed with denunciation of the sin of state partnership with this iniquity. Now, there is not one scintilla of argument more, from a moral point of view, for governmental complicity with the liquor-traffic than there is for governmental complicity with bawdy houses and gambling-hells.

It is because the liquor-traffic is so all-pervading; because it has become so entwined with and so intimately related to our business, our politics, our social habits and customs, that the moral sense of the great majority of the people seems to have lost the clear discernment when the liquor-traffic is under discussion, that they bring to bear on kindred evils; hence all sorts of compromise and half-way measures have been advocated to do away with the evils of the liquor-traffic. But in spite of them all, that traffic has grown and flourished and strengthened itself on every hand, thus illustrating the truth of the saying, that a compromise with evil is a victory for the Devil.

Now let me tell your readers a bit of news, for news it will be to the great majority of them, and it goes to the very marrow of this whole matter:

At every session of our Congress for 20 years, a bill has been presented, known as the "Commission of Enquiry Bill," the purport of which, in brief, is that a commission be appointed and authorized by Congress, to investigate the liquor-traffic and its effects.

This would seem to be a legitimate subject for inquiry, because our Congressmen are supposed to be sent to Washington to legislate in the interests of the people; and we have it on the authority of medical men, keepers of insane and pauper institutions, prison officials, and students of political economy and finance, that the liquor-traffic, as Gladstone puts it, "is worse than war, famine, and pestilence combined." Yet our Solons in Washington vote down or smother in committee every effort to secure an official inquiry into this great iniquity; and it makes no difference which party is in power, the result is always the same.

It has been an easy matter during these years to secure official inquiries into the causes of cholera in hogs, and the grasshopper pest of the Western plains; but a resolution to secure an inquiry into a traffic which debauches and degrades the manhood of the nation, fills our prisons with criminals, our poorhouses with paupers, and our asylums with the idiotic and insane,—which annually sends to drunkards' graves 70,000 of our fellow-citizens, and entails an annual loss on the country of $2,000,000,000, *this* is not to be considered at all. Why? Simply because the party which would take the responsibility of passing such a resolution would be hurled from power at the next election by the powerful political influence of the liquor-traffic. "Save the *party*," says the politician, and let the hydra-headed monster—the

saloon—bring poverty, distress, death, and woe to the people; and nearly 4,000,000 Christian *men* by their votes say amen!

Hudson, N. Y., June 12. JAMES MCNEILL.

ANOTHER REPLY TO FRIEND TOMLINSON.

Mr. Root:—After reading the article of J. Tomlinson, and your comment on the same, I was led to exclaim, "Friend Root must be thankful for small favors when he feels like praising God for such a weak attempt to justify the government in its partnership with the liquor-business." Mr. T. says, "It is a very serious thing to impute evil intent to the government." Very true; but the matter becomes doubly serious when the imputation is sustained by *facts*. But I will leave each one to draw his own conclusions as to the intent, and will deal simply with the facts.

I understand that a partnership exists where two or more parties are interested in a business in a way that each party has a share in the profits of the business. Now, what are the facts? The government permits and legalizes the manufacture of the poison, and for its share in the profits receives 90 cents per gallon, and the other partner has the rest, and yet there is *no* partnership! Oh, no! can't be, because this is a "Christian government;" and yet it legalizes, protects, upholds, and defends this accursed liquor-traffic. Friend T. says, "Very many men are born into the world with a propensity to evil ways, and the drink habit is one of the strongest of these propensities." So are murder, theft, and prostitution some of these propensities. "This thirst for strong drink creates a demand for it." So does the desire for the gratification of these other desires create a demand for *them*. Again, he says, "So long as this demand exists, the manufacture will go on. It can not be stopped." So long as the demand for the gratification of the propensity to steal, murder, etc., exists, the business will go on. It never has been stopped, and it never will be so long as the desire for these things continues. And now let the government grant a license to all murderers, thieves, and criminals of every grade; in short, go into partnership in the business, and receive in return a share of the profits. If not, why not? He says there is no mortgage on the boys. Let friend T. go into the saloon and attempt to remonstrate with the keeper in regard to his business, and see how soon his attention will be called to the mortgage (license) hanging up in his place of business, bearing the seal of (*the other partner*) the government.

True, as Mr. T. says, many are born with an appetite for strong drink; but the number sinks into insignificance compared with those who *acquire* the habit at the legalized breathing-holes of perdition, and the number would be still less were it not for the fact that the ancestors of those who were thus born had acquired the appetite by indulgence in the social glass at these places where thousands of our boys are acquiring it to-day, to be transmitted to their children yet unborn. In the way of a remedy for the drink-evil, our friend speaks of "laws to tax and hamper the liquor-interest;" "the rules of business interests;" "the efforts of temperance societies." etc. Now, does not our friend T. know that all these things, and even the gospel mentioned, have been in operation years and years, and what has been the result? A steady, constant, and aggressive growth of the business, until to-day there is more liquor consumed per capita in the United States than at any other period of its history. In proof I will give a few figures from government statistics: In 1840 the total of distilled spirits, wines, and malt liquors consumed was 17,244,823 gallons, or 4.17 gallons per capita. In 1880 it was 506,079,400 gallons, or 10.08 gallons per capita. In 1890 it was 976,272,770 gallons, or 15.49 per capita; and this under the full force of our friend's suggested remedies. Will Bro. T. now (in view of these facts) tell us how long this condition of things will have to continue in order to accomplish the desired end? The *remedy* that I would suggest would be this. Let the government withdraw from the partnership, and pass a law prohibiting the manufacture, exportation, importation, transportation, and sale of all intoxicating beverages. Then let the temperance people withdraw their support from license parties, and unite in putting a party in power that wants the law enforced, and stop voting with saloon-keepers for the perpetuation of the business. Then invoke the divine blessing on their efforts. Then there would be fewer children born with appetites for drink, and fewer appetites formed after they are born; and the law would be as well enforced as any other criminal law.

Now, I will just say, in conclusion, let us each try to act consistently; talk right, and vote right; do our duty, and trust God for the results. W. S. G. MASON.

Morenci, Mich.

ANSWERS TO QUESTIONS

FROM BEGINNERS.

M. S. W. asks if he can Italianize easily at swarming time by putting drone-traps over the entrances of colonies having impure drones. *Ans.*—Yes.

W. C. D., of Connecticut, desires to know whether sawdust would answer just as well for packing double-walled hives as chaff. *Ans.*—Sawdust will do just as well, we think, so far as protection is concerned. The only objection to its use is that it is heavier than chaff.

G. A. C., of Tennessee, wants to know how to move a swarm of bees that has clustered on the trunk of a tree. *Ans.*—Blow a little smoke on them to cause them to be a little more peaceable, and then with a brush or handful of heavy weeds brush the bees into a large tin pan. The brushing should be accompanied with a few whiffs of smoke, otherwise the bees may be angered.

H. C., of North Carolina, referring to our A B C book, and the sure way mentioned therein of introducing valuable queens by giving said queens to hatching brood, wants to know how long the hive should be kept closed up. *Ans.*—If brood is hatching readily, there will be young bees enough to care for the queen in a few hours. But the hives should not be closed air-tight. A wire screen should be placed over the entrance so as to allow of a little ventilation. In two or three days the young bees will be old enough to defend the entrance.

W. U. R., of Florida, asks us what we prefer for shading bees. Trees or a shed? *Ans.*—In hot climates, especially in Jamaica, long low sheds are used. In the North, we prefer trees. But experience has proven that bees that have direct sunshine during the early part of the spring, in the North build up quicker than when under some sort of shade. As a general thing, on account of the very hot weather that is usual in most of the Northern States, we prefer to have the bees in the shade. They are

less liable to lie out at the entrance, and loaf; and it is more comfortable to the apiarist to work in the shade.

J. M. G., of Pennsylvania, says he has one of our eight-frame hives, but does not know what the division-board is for. *Ans.*—With spaced (or, rather, self-spacing) frames, it is best to have a division-board so the frames can be removed without rolling over and killing bees. After removing the division-board, space over, from the middle, three or four frames close up to the hive. This can be done at one operation providing that Hoffman frames are used; you will then have plenty of room to pull out the frame you desire to examine. The division-board is also a convenience in reducing the hive capacity when the colony occupies less than the regulation eight frames.

J. M. S., of Indiana, wants to know what is a good remedy to keep ants from hives. *Ans.*—Find the nest if possible, and pour about half a pint of coal oil on it. A better way (according to Prof. Cook) is to buy an ounce or two of bisulphide of carbon at the drugstore. With a crowbar make a hole right in the center of the nest. Pour in the bisulphide, and close the hole by tamping around the edges. That will be the end of those ants. Ants do no particular harm in the hives here in the North, although they do considerable mischief in the South. As we have not had any experience in treating the "varmints" in that portion of our country, we will leave it to some of our subscribers there to tell how they get rid of them.

S. P., of Florida, wants to know how to keep extracted honey from candying. *Ans.*—The only way we know of is to let it get thoroughly ripened in the hive—that is, evaporated down so it will be thick. Such honey, without any further treatment, will sometimes keep all winter without candying. As a rule, however, it is necessary to heat the honey over hot water to about 150°, and then seal it, while hot, in bottles or tin cans. But there is no method that is infallible. If possible the heating should be avoided, as some think that a little bit of the delicate aroma is lost. The Californians allow the honey to evaporate in large shallow vats until it becomes thick. Such honey will keep for a long time without candying.

J. E. L., of Virginia, says he has a colony of bees in a patent hive, and they will not swarm, although they cluster out at the entrance. *Ans.*—Bee-keepers have for years been racking their brains for a system or hive that would prevent swarming, or a strain of bees that have no desire to swarm. Better get a patent on the bees, and sell the daughters of the queen. If the bees cluster out at the entrance, possibly there is a lack of shade or a lack of room. Plenty of room, good big entrances, and shade, will usually cause the bees to go inside. Give them a super of empty sections, one of said sections being filled with partly drawn-out comb and honey. If extracted honey is the object, place an upper story on, with a frame of brood above, and empty frames on each side.

J. S. L., of New York, wants to know how to make vinegar of honey. *Ans.*—It takes two pounds of honey to make a gallon of vinegar, and from one to two years' time. Use, as a general thing, only refuse honey—such as can not be used for any other purpose. Put water enough into the honey so it will just float an egg, and allow the sweetened product to stand in a barrel with one head out, under shelter. Cover the barrel with a piece of cheese-cloth, to keep out the dirt and flies. This sweetened water will soon begin to "work," and occasionly the scum should be taken off with a skimmer until nothing rises. It will take anywhere from a year to two years to make good vinegar. But honey vinegar is not profitable unless old refuse is used—such as can not be sold for any other purpose.

C. C. M., of Ohio, asks what time of the year is best, and what condition the bees should be in, to produce all worker cells from wired foundation in brood-frames. *Ans.*—At any time of the year, and under all conditions, so far as we know, you can secure worker comb from worker foundation. During the height of the honey-flow, with only starters of foundation, the bees are apt to build drone comb, because they can make this quicker, and thus sooner have a receptacle in which to store their hard earnings. Drone comb may result from worker foundation, providing said foundation is adulterated with paraffine or ceresin wax. But we believe that there are no foundation-makers in this country who make use of any thing but pure beeswax. Nothing else seems to answer, for other things have been tried. *C. C. M.* asks further what a "pulled" queen is. We will let the other "C. C. M.," of Illinois, answer this question. It was he who originated the term and practice.

W. H. J., of Ontario, asks how we ship comb honey. *Ans.*—We follow no invariable method. While we ship in 12, 24, and 48 pound cases, we prefer the 24-lb. single tier. If we have half a dozen or so of cases to ship at once we crate them up in such a way as to leave convenient handles at each end of the crate. On the bottom slats of the crate is piled straw deep enough to make a sort of cushion between the crates and said slats. The handles at each end of the crate tend greatly to insure careful treatment. As another precaution the cases are crated up so the glass shows on the outside. If freight-handlers see that the crate contains something easily broken they will be more apt to handle with care. In shipping honey by the carload we recommend strewing considerable straw on the floor of the box car. The cases can then be piled up with spaces in between, so that the separate combs are parallel to the rails. Be sure not to put them in the car the other way. We omitted to mention above, that, in small shipments, we put on a caution label, printed in red letters, with a finger on one end. The directions below this are to load with the finger pointing toward the locomotive.

W. E. D., of West Virginia, wants to know if it is a good plan for a beginner to open his hives every day or two to examine the brood-comb. *Ans.*—An enthusiast will probably do this whether it is advisable or not. It might and it might not do harm. During a honey-flow, however, we would not disturb them unnecessarily. Every little interruption prevents just so many tiny drops of honey from coming in in the regular way. W. E. D. also asks what to do when all the brood-combs get full of honey in the midst of a full flow of honey, so that the bees make combs all over the tops of the frame, even when they have section boxes in the super. *Ans.*—If the flow of honey continues, the bees ought to go above; but sometimes they get quite content with what is already stored in the brood-nest, and then you must set them at work in some way if possible. If you have other colonies that are started in sections, remove two sections with comb partly drawn out, and filled with honey, from one of the supers where the bees are working, and place it in the super where the bees seem disinclined to go. Give the bees plenty of shade; and if they then fail to go above, we should be tempted to clip the queen's head, and introduce one of a strain whose bees go into sections readily.

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

CRIMSON CLOVER FOR HONEY, ETC.

Honey is almost dropping from locust this season, and white clover is plentiful. I think so much of crimson clover that I should say it is worth untold millions to this country, for turning under; and I now find that my bees are swarming upon it. It has been in bloom 20 days. ARTHUR T. GOLDSBOROUGH.

Washington, D. C., May 30.

HONEY FROM FIGS.

I have been told that the fruit of the fig-tree is used by the honey-bee in producing honey. I should be glad if you would give me a word of information in regard to it. Figs of every kind grow readily in this climate. If the skin of the fruit were broken, and the bees would make honey from the fruit, it appears to me that it would be profitable to plant an orchard of fig-trees. I have a few colonies of bees, but no figs. SARA THACKER.

Applegate, Cal., June 12.

[Bees would make a sort of fig syrup, but we question after all whether it could be called honey.]

A GOOD WAY TO STRENGTHEN WEAK COLONIES, AND PREVENT SWARMS.

I think I have a better way to strengthen weak colonies than Dr. Miller's way of doubling them up. Find the strongest colony, and carry the weak one to it; set the strongest one off its stand; place the weak one on it and the strong on top of the weak one. You build up the weak one, stop the swarming mania, and convert it into a mania for honey-gathering. No patents. Try it. I have often, and it has never failed. The change should be made when the bees are busy gathering honey.

Tucson, Ariz., June 8. P. PLUMMER.

[This, no doubt, would strengthen the weak colony, and possibly prevent swarming, though we should not be sure of it.

DO BEES SPOIL FLOWERS?

Mr. Root:—Mr. Schmalhausen, professor of botany in the University of Kiev, told me that bees eat (spoil) flowers. Please give your opinion. ALEXIS IKONNIKOFF.

Kiev, Russia, April 28.

[Friend I., I think your professor must be mistaken, or else the flowers of Russia are very different from those of the rest of the world. Instead of injuring the flowers it is quite the contrary. Many flowers could not exist were it not for the assistance the bees give them in the way of fertilization, and I have never before heard such a remark from any professor or any other man of intelligence. Some ignorant people have from time to time conjectured that the fruit would not be as sweet if the bees were to take all the honey out of the blossoms. Prof. Cook and others have, however, repeatedly disproved this fallacy.]

TWO LAYING QUEENS FIGHTING.

Dr. Miller, in Stray Straws, on page 425, says that he never saw two laying queens show fight. I have, and to the death too. Last year I was requeening my apiary, and, while catching out the old queens, I put two under a glass tumbler to see what they would do. In a few minutes, and after their scare was over, they engaged in deadly conflict, and one killed the other. One seemed to be much more vicious than the other, and it was she that was victor. Both fought, however. H. F. COLEMAN.

Sneedville, Tenn., June 7.

HOW TO HAVE THE QUEENS FERTILIZED BY ITALIAN DRONES.

I have two swarms of Italian bees (from queens bought of you last year), and seven colonies of blacks. I wish to Italianize the seven. Now, let us suppose that I follow out your instructions in the A B C book concerning queen-rearing and introducing. We will next suppose that the virgin queens are almost ready to srart out on their wedding-tour. I place the bee-guards at the entrance of the seven hives containing black bees, and thereby keep drones in that they may have no chance to meet the virgin Italian queen. Would it be most likely to occur that the Italian drones would meet the young queens from the seven hives? Remember there are but two swarms of the Italians.

Ranger, N. C. C. F. WALKER.

[The queens would probably be fertilized by the Italian drones provided the perforated zinc did not exclude the queens. Some zinc is made to exclude drones but not queens.]

AUSTRALIA'S HONEY-EXHIBIT AT THE WORLD'S FAIR.

You will, perhaps, be glad to hear that our small exhibit for the World's Fair has been shipped to Chicago. It consists of 126 2-lb. jars, and, after the exposition, it will be on permanent exhibition in your Department of Agriculture at Washington, D. C. When you get to the show (as, of course, you must do, being a patriotic American), I should be very glad if you will seek out our exhibit and give us a critical opinion on the quality, etc., in GLEANINGS. You will notice each jar has the same general-idea label; but every lot of six has on that label a distinguishing number. These refer to individual exhibitors, each man being limited to six jars for sample. We should very much like your opinion as to which of the samples of six out of the 126 jars you consider the best, and why, as well as the general expression on the whole exhibit. R. PATTEN.

Bolevarra, West Maitland, N. S. W., April 28.

[When we go we shall take particular pains to look up your exhibit. Thanks.]

MORE ABOUT THE PYRAMIDS.

On page 363, May 1, you tell about the pyramids. The building is a good deal more irregular—I mean the steps. They don't look like steps when you are near them, but more like a great stone-pile, as you say. The spaces between one row and the other were originally filled out with plaster and cement and alabaster stones, carried off to Cairo by Mahomet Ali to build the beautiful mosque on the citadel. Behind the pyramid of Cheops is the pyramid of Cephrenes, the top of which is still perfectly smooth and unbroken, and from which it can be seen how the others were. Nobody was ever on the top of that one, except the builders, who must have begun the cementing at the top and continued to the base. A good many cubic meters of the covering are gone, owing to the wind and weather, and man's hand. I was more astonished at the immensity of work and time it took to pile together, than by the beauty of the work, at my midnight visit to the interior of the great Cheops pyramid, with its immense blocks of granite across the sepulchral chamber, reported in GLEANINGS in 1890.

PH. J. BALDENSPERGER.

Nice, France, May 1.

DEAD BEES AS A DECOY FOR SMARMS.

An old bee-man gave me a new idea this morning. It is, to take a lot of dead bees, which can always be found, and string them on a thread with a needle, after which they are wound about a pine bough, which is stuck in the ground a few steps from the hive. He says that every swarm that comes out goes straight to the bunch of dead bees, and he has no climbing to do—simply pulls the pine bush from the ground and shakes his bees off in front of his hive. Another friend, who is extremely fond of gardening, has a novel plan for keeping down the weeds in his onion-bed. He has the rows quite close together, and between them places pine poles, then fills in between the poles where the onions grow, with manure, and you just ought to see them grow. The poles answer the double purpose of keeping down weeds and retaining moisture. WM. E. CUNNINGHAM.

Louisa, Va.

CAN WE HAVE A STANDARD SIZE OF SECTION?

No doubt we can have uniformity in this article; we can at the same time have honest weight, and introduce the metric system. Concerning the latter, we are behind the times; and what good does it do to study this simple international system in school, to be convinced of its simplicity, because of the decimal fractions, and not accept the meter in practice? C. P. Dadant will probably agree with me in this opinion. Dr. Miller says the $4\frac{1}{4}$x$4\frac{1}{4}$x$1\frac{5}{16}$ section comes near averaging a pound; therefore, to weigh 1 lb. on the average, they must be a little larger. I propose this:

$$\left.\begin{array}{l}4\frac{1}{4}\text{x}4\frac{1}{4}\text{x}1\frac{31}{32}\text{ in.}\\ 10.8\text{x}10.8\text{x}5\text{ cm.}\end{array}\right\}=1\text{ lb.}$$

To make this change would, according to Dr. Miller, not require so much alteration in machinery, and be an even number (5 cm.) compared with the confusing fractions as now.

Sometimes it seems to me as if we are much like an old woman over in Switzerland, early in the fifties, when the Latin Money System (1 franc makes 100 centimes) was a new thing in that country. She said the government should have waited with the new money until all the old people had died.

$4\frac{1}{4}$x$4\frac{1}{4}$x$1\frac{31}{32}$ in. =1 lb. scant.
10.8x10.8x5 cm.=583.2cm^3 =1 lb.

After a while, to suit the metric weight, 12x 12x4.5 cm.=648cm.=500 grams.

Hamilton, O., May 14. JOHN KERSTEINER.

HOW LONG MAY HONEY BE KEPT?

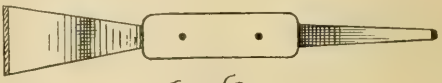
We clip the following from the *New Smyrna Breeze*, of June 8:

Some men who were digging a well on the place of R. C. Denham, at Live Oak, found, about ten feet below the surface of the ground, a petrified tree. The petrification being only on the outside an inch or two, the trunk was soon split open. In it was found a soft, sticky mass adherent to the sides of the tree; and on tasting this it was found to be honey, which had been shut up in that tree for—it was impossible to say how many years

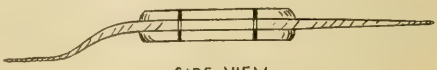
If any of our readers who live in the vicinity indicated above, or who know any thing about said vicinity, can tell us whether the above be true, we shall be very glad indeed to hear from them. I am inclined to think it a newspaper canard; yet if the petrification was of such a nature as to seal up completely the honey in the tree, it may be possible. The difficult part to understand is, that petrification is accompanied by water or moisture; and if this water or moisture were to come in contact with the honey it would certainly be decomposed very quickly. Honey sealed up hermetically in a glass jar or tube might keep unimpaired for ages and ages; but if the best honey in the world should come in contact with air and moisture it would hardly keep in a warm room for 24 hours. I know there are many wonderful things in Florida; but truth is strange enough, without going into fiction to get astonishing items for the newspapers.]

CONVENIENT TOOLS FOR THE APIARY.

There is one tool that I have used ever since I have handled bees in sash hives, and that is over 30 years, that I would not do without, and yet I have never seen it used nor spoken of by anybody outside of my circle of acquaintances, and in my out-apiaries. It is what I call an opening-knife, or combination tool. I send you



TOP VIEW



SIDE VIEW.

a rough draft of one. The best length is about 11 inches. I have yet to see a bee-keeper who used one until he got used to it, who would ever do without it. The pointed end, like a screw-driver, is used for prying open and loosening the comb; the other, for paring off wax or propolis. The handle in the middle should be made of bone, or something white or conspicuous, so that it can be seen easily. Make one and give it a trial, and I think you will manufacture and recommend them to your patrons.

Another thing I have looked in vain for in all the reports of moving bees. I have moved, almost yearly, from 5 to 20 miles, and I have never lost a stand or got into trouble on the road by bees escaping. After a good wire bottom-board to insure ventilation, the most important article is *mud*. Have your mud and paddle; and if an old hive does not fit tight, slap on the mud; or if it springs a leak, plaster it over. It will soon dry and effectually close all holes and leaks, and harm nothing. I never start with a load without a bucket of mud.

I wintered on summer stands with chaff on top, separated from the bees by the thickness of a gunny sack, and lost only 3 out of 80, but lost some 20 since in a storm that overturned and destroyed them. During the winter of 1891 I lost over 300 stands from honey-dew. Three-fourths of the bees in this part of Illinois wintered without absorbents on top, and died in mid-winter. JAS. A. SIMPSON.

Alexis, Ill., May 5.

HOW TREGO RAISES CELLS.

[One of the prominent queen-breeders, it seems, has been greatly crowded with orders, and for a time was unable to get cells fast enough. How he finally succeeded is told in a private letter, an extract from which we make.]

I have refused every call for nuclei, as I am *very* short of bees (for an extensive breeder). I now have 126 nuclei, 11 fair colonies, and four great big booming ones; and the colony that contains my breeding queen, making 142 hives with bees in. I am so rushed for queens that I have not dared to keep a single queen to test, and have sent off every one soon after she began to lay. To keep my nuclei up I have 25 cheap queens (hybrids) that I shift around as

they are needed; and when there is no room for them I cage them for a few days.

The unexpected rush for queens, together with the bees refusing to accept the Doolittle cups, put me a little behind; and as I have but one breeding queen I could do but little at starting cells by the old plan of giving the cell-building colony brood from her; but at last I have hit it. I cut strips of black and hybrid brood, like the Alley plan, and give them to nuclei, and in two days I find a nice lot of cups with the royal food already in them. Then I pick out the "scrub" larvæ and put in some from my breeding queen, and give them to the four big colonies to finish up. I draw on the 11 other colonies for brood to keep the big ones booming. S. F. TREGO.

Swedona, Ill., June 9.

[As we, too, never succeeded entirely with the artificial Doolittle cups, we have decided to adopt the plan in our yard. We tried it in a limited way when Alley first suggested the plan, and now propose to give it a more thorough test. It is Dr. Miller also who prefers the Alley plan.]

REPORT FROM CHAS. F. MUTH; PROSPECTS FROM CLOVER GOOD; MELILOT NOT TO BE RECOMMENDED.

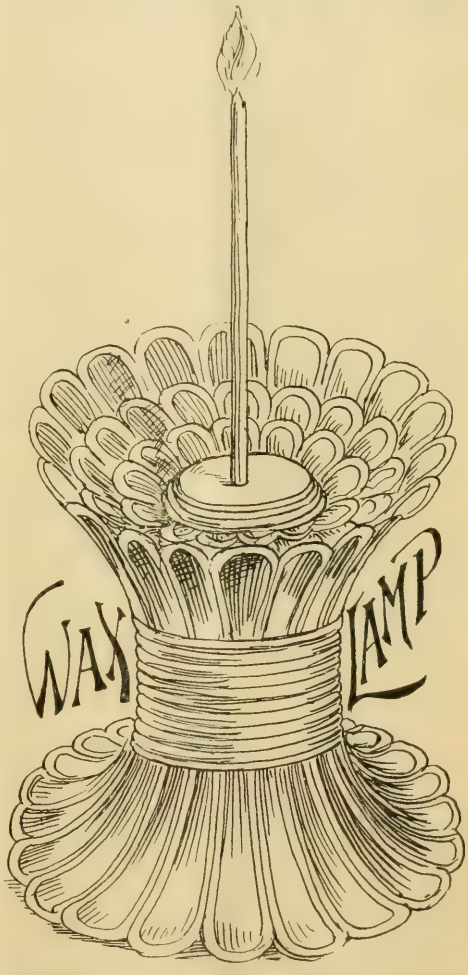
This is our dullest supply season ever experienced. We sell nothing to compare with former seasons. It seems that the disappointments of the last four years have made our friends very cautious, so that nothing is bought unless it is needed.

If the growth of white clover all over the commons, outside of our city, be taken into consideration, our prospects for a good crop of honey were never better than they are now. All we need is dry weather, for a change, and warm nights during June. It is a known fact, that no honey will be developed in white clover during the day when the thermometer was down to 55° the previous night. Melilot has run out of existence all white-clover sprouts within our city limits, our hilltops, and their near surroundings. It grows everywhere where white clover used to grow; but its only merit is, that our bees are kept breeding during July and August, during which time they used to have a rest; and no brood, almost, could be found in our hives during the month of August. With the new start of vegetation in September, our bees would commence again to breed, and go into winter quarters with plenty of honey and young bees. Melilot has changed this state of affairs. Since it has taken possession of our commons and hilltops, white clover is there no more; bees keep up breeding until late in fall; have no stores for winter, as used to be the case, and, unless they are fed liberally, there is a chance for starvation during winter, or, at least, by the time that honey comes in again. We all have seen honey from melilot; but who ever saw a crop of the melilot clover? Don't recommend melilot any more as a honey-plant, Bro. Root. It does us more harm than good.

Cincinnati, O., June 7. CHAS. F. MUTH.

THE LAMP OF OUR FOREFATHERS.

Friend Root:—I send you a sketch of a relic of the past, the light of our forefathers, thinking it may be of interest to the readers of GLEANINGS. It is made of a soft cotton string dipped in melted wax, and a corncob. Melt the wax by gentle heat, and get two of the children to draw the string through it, while you hold it in the wax with a forked stick. The string should be about 150 feet long. Draw it through the wax twice, to give it a heavy coat. Use a cob with the small end broken off, and punch the pith out. Wind a layer of the waxed string around the cob. When you get to the end with the first layer, turn and put a layer on lengthwise the cob, letting it project ½ inch at each end of the cob; then wind around again, then lengthwise again, and so on until finished, letting each lengthwise layer extend ½ inch more than the last; also make the layers that go round the cob shorter each time. When all is wound except one foot, push the end through the hole in the cob, letting it extend about 6 inches above the top of the cob. Bend all the projecting layers outward, giving it an appear-



ance as handsome as a vase. The wax can be tinted any color you choose, with any of the aniline dyes used for dying cotton. This makes a beautiful soft light, and will last for several weeks. R. W. STEWART.

Bowls, Ga., March 15.

FRUIT-CANNERIES AND GLUCOSE; WHAT IS REPORTED AS BEING DONE IN CALIFORNIA.

I take the liberty of addressing you on a subject that is becoming a very important one to me and to my brother bee-men in this locality. Although I am a perfect stranger to you, yet to me your name is very familiar—so much so I almost imagine that I *do* personally know you.

For some years back the fruit-canneries have

been buying large quantities of honey. The natural supposition was, that it was being used by them in place of sugar, causing us to sell our product at the price of sugar; but on investigating this state of affairs I am informed by *workers* in those canneries that *no honey* is used whatever for preserving purposes. They simply buy it to adulterate it with glucose, making two carloads of such stuff from one of honey. Now the public are getting afraid to buy extracted honey for fear it is not genuine. Should this continue, it is going to destroy a large part of our business—the principal business in this section. Another point is, for two years the honey crops have been failures. This year the commission men are at their old tricks, trying to squeeze us down to the sugar-standard prices. I always believed that the supply of any given article controlled the price; that is to say, the less quantity, the bigger the market value would be. In the next place, you can not fail to see that the adulterating evil is really the worst; for every case of this rubbish sold to the consumer is just so much less pure honey sold by us. To sum it up in a few words, it keeps down our profit and ruins the trade in extracted honey. Finally a cent or two on the pound to us means a living; to the consumer the price will be just the same if we can get a responsible party to market our honey in the Eastern States, for on them we depend to buy our product.

This year the honey is splendid—white, and water-white. So far I have not seen any dark-colored honey, and the flavor of our sage honey is fine. Alex. Morrison.

Newhall, Cal., May 30.

[What you say may be true; but we believe now, that, as honey has been coming in more freely in California, the price will soon be so low that the mixing of glucose would hardly be worth practicing. The rascals who would do this sort of work would not risk it unless there were considerable margin; and when the margin is small they will probably handle the pure goods. If the fruit-canneries in California should continue to use glucose, it is a matter that should be brought to the attention of the Bee-keepers' Union.]

REPORTS ENCOURAGING.

Bees are just booming. I have more honey already than I have had in three years before.

Beach City, O., June 12. A. Miller.

Bees are doing well. I am working 40 stands for comb honey; some hives have their second super on at this date. Chas. Howell.

Hackettstown, N. J., June 15.

We have been here since the second of April, and have extracted, up to this time, over seven tons of honey. By the time this reaches you we shall probably have ten tons; taken from 175 colonies. Mrs. H. F. Carpenter.

San Fernando, Cal., May 29.

PROSPECTS OF A BIG HONEY YEAR.

Every spot of ground where white clover grows is one mass of bloom, and bees are just booming. I have never seen them work on clover as they are doing now. Basswood will bloom profusely. Chauncey Reynolds.

Fremont, O., June 8.

[It seems as if nearly every report reads like this. Prospects are certainly good.]

We had a good flow of honey from guajilla (pronounced waw-hee-aw, but properly gwah-*heel*-yah) and catclaw. It started about the 10th of April. Bees on an average were too weak to take the best advantage of the flow. I have about 10,000 lbs. from 160 colonies, spring count. J. A. Schuddemagen.

Sabinal, Texas, May 19.

WHY THE RAMBLER SMILES.

Our honey-yield is a much better crop than last year, but still the yield at large will not be immense. I now have 7 tons, and will get 3 or 4 more. McIntyre writes me that he expects over 40,000 lbs. He runs his extractor with his water-motor, and it works like a charm.

Redlands, Cal., June 12. Rambler.

The outlook for a good honey crop is good in the San Jacinto Valley. The first carload of honey of the season was shipped last week. We sold for 6 cts. There are two more carloads waiting buyers at the same price. The honey is extra thick, water-white, and of as fine flavor as I have ever seen. H. I. Morse.

San Jacinto, Cal., June 8.

GREATEST HONEY-FLOW IN YEARS.

We are having the greatest honey-flow here for years, and of the finest quality possible. I have extracted 75 lbs. from some hives, and have colonies with their increase, one swarm, which have filled nearly 100 boxes already. If it keeps on we shall harvest the largest crop ever taken in this portion of the country. I am running 90 hives at present, part for comb and part for extracted. I allow each hive I run for comb to swarm once, and get big results this year by so doing. Edgar Briggs.

Poughkeepsie, N. Y., June 17.

A GOOD REPORT FROM TENNESSEE.

Friend Root:—I should like to tell you what a continual round of pleasure we have had since swarming commenced. When I say *we* I mean my little wife and myself, for we two are all there are of us, and we have been busier than a man killing snakes. And such swarms I never saw before, for I have let most of my bees do their own swarming. I have tried both ways, and have had the best success that way. I said I never saw such swarms before. Well, I never did. We have had several swarms that it took two Dovetailed hives to hold. You could not get them into one such hive, even if you packed them in like white beans. Some of our swarms are great-grandchildren. That's the way bees increase down here. I never saw any thing like it before. The honey season has been exceptionally good, with the exception of about 12 days in May, when it rained every day. The bees have been on white clover for three weeks, or four, perhaps; and it is plentiful yet. It blooms here three or four times a year. We run for comb honey mostly; get 16 cts. for box honey, and 10 for rough. They don't want extracted here, but want comb mixed with it—what we term rough honey. But it's delightful business standing over a hive with half a bushel of bees in it, with the thermometer up to 85. If there is any sweat in you it is pretty apt to start.

We went into winter quarters with 28, and came through without a single loss; sold 4, and had 24 left; have 40 now, and let 8 run away while I was sick; and really I am glad they are gone. We have enough left to care for.

F. H. Finch.

Summertown, Tenn., June 21.

OUR HOMES.

But seek ye first the kingdom of God, and his righteousness, and all these things shall be added unto you.—MATT. 6:33.

SOME QUESTIONS FOR A. I. ROOT.

Friend Root:—While I work for the support of myself and family in the six days that God has given for work, is it right for the preacher to work (preach) on Sunday for the same object?

While I live in a very plain and common way, and am unable to send my children to school, is it right for me to help the preacher to live in high style and educate his children?

These questions are asked in this and perhaps many other communities but I am unable to answer, so I refer them to you, feeling that, if it is your good pleasure to give us your views in the matter, they will be helpful to many. I *try* to do the *right* thing under all circumstances.

Roxobel, N. C. G. H. BARNES.

My good friend, I am very glad indeed to help you in any such moral question as the one you propound—that is, so far as I am able to help you. In the first place, it seems to me you start out on a wrong basis. To be sure, it is most commendable for a man to support himself and family—to be self-supporting—to pay his way as he goes; and there are thousands among our neighbors whom we should be very glad indeed to see do that very thing. Yes, it is a sad reflection that, even in this our broad land, with its privileges and opportunities, there are so many who do *not* take care of themselves and their families—so many who are more or less a burden on the community. Now, while I say this I at the same time maintain that the man who has no higher motive than to support his wife and family stands on a very low plane. Let me see if I can not make it clear to you.

A good deal of the time the most of us talk and act as if all the duty we owed to God or to the world were to take care of ourselves and families—to be self-supporting; and when we speak of the different occupations that men enter into, we often consider which occupation will give us the most money. For instance, our agricultural papers at times advise our farmers to raise more corn or oats or potatoes, so they can make the more money; and is it perfectly right and proper to be striving for that line of work which will give us most pay? In one sense it is; but there should be before all of us a higher and nobler incentive. While we work for our own personal good, we should also be laboring for the public good, no matter what our occupation may be. Some men build houses, and it is a very commendable thing to do. The carpenter is considered a very respectable man. Well, now, suppose the carpenter should say, "I believe that, on the whole, I can make more money farming than I can in building houses, therefore I am going to sell my tools and buy a farm." This is all right and proper. Suppose, however, the carpenter had heard some friend or relative say, "Now, if I were you, instead of going on to a farm I would teach school—why, *I* get more money teaching school than any farmer or carpenter around here;" what would you think, my friend, of a schoolteacher who, simply because he can make more money at it than he could farming or in building houses, would talk like that? Or, if you choose, suppose you should hear some young doctor say that he had made ever so much more money doctoring than he had in teaching school or in farming, or any thing else he had tried; and suppose he should urge his friends to all go into the business of doctoring because there is lots of money to be made at it. What would you think of such a doctor? Wouldn't you begin to feel uneasy at the prospect of having to call a doctor who had bragged about the large amount of money he could make in a short time by doctoring folks when they were sick? Why, I need not tell you that it would be damaging to the schoolteacher or to the doctor either, if it should get out that his sole or principal motive in teaching the children, or in doctoring sick folks, was to make as much money as he could in the shortest possible time. The teacher who has charge of your children, I am sure, is not that sort of woman or man; and if your family physician has no other motive than to make all the money he can—yes, and he may do a reasonably good job too, when he is called upon—why, I should say, God help you.

Why is it that we demand that the schoolteacher should have some other incentive, as well as the doctor, than that he may make money or support his family? A neighbor right across the railroad track once told me the reason he kept a bar in his house, and sold liquors, was that he might support his family and educate his children. He was a poor ignorant German, and I fear he was a bad man at heart or he would not have urged any *such* reason why he should go on keeping a saloon. Poor fellow! he *did* educate his children, but at the same time he educated *himself* to such an extent that he now fills a drunkard's grave. When we are looking up a teacher we want one who has love for his country and love for his fellow-man, and a high sense of the high honor and responsibility that rests upon him. We want him to realize the sacredness of his task. The schoolteacher who drinks or swears—no matter what his qualifications may be in the way of education—would never get a position if his bad habits were known; and I believe that few teachers, in town, city, or country would care to take the risk of being seen smoking a cigar or playing a game of cards. The whole world demands something better of them. The man who builds your house may be a rather bad man, providing he keeps his bad habits out of sight while he is on your premises, and at the same time does a good job. You do not care very much whether he makes lots of money at it or not; and even if he should brag of how much money he made in building that house, you would not care particularly about it, providing he did it as cheaply as any other carpenter would. But suppose the schoolteacher or doctor were to do the same thing—don't you see it would not do at all?

Now, these two professions I have been speaking of—teaching and medicine—come on to this ground of responsibility. The teacher who is supposed to exhort your children toward truth, honesty, purity, sobriety, etc., must *himself* set a good example. His soul must be in the work of making *child*kind, if not mankind, better. It is all right that he should get good pay for good work; but we do not want him to put the *pay* first. The schoolteacher who works *solely* for the money there is in it would not be worth having. We demand, in the language of our text, that he shall seek first the kingdom of God and his righteousness. Perhaps we do not put it in just so many words, but that is the way we feel about it; and *he* knows, and *we* know, that, just as soon as the community discovers that he is a good and efficient man, and is laying the foundation for good and noble characters among his pupils, then he will get good pay, just as the latter part of our text promises. The same with the doctor. If a patient of his is spoiling his body by using tobacco or whisky, we expect the doctor to be man enough to join hands with the preacher (I believe that is what you call him, friend B.),

and labor for the salvation of his *soul* as well as his body. Shame on the doctor who would say that he followed his profession only because of the money there might be in it! Why, a doctor is expected to do a large amount of doctoring without any pay or thought of ever getting a copper for it. It is a part of the business. If he has not a genuine honest love for his fellow-men, so that he can work for nothing, when the saving of life demands it, he is not fit to be a doctor, and he would not long be tolerated in any community. I appeal to my medical friends as to the truthfulness of what I say.

Now, the doctors and teachers are employed to look after the physical and mental welfare of the children of the people. What shall we say of the minister? In the first place, good friend B., you are making a fearful blunder when you take it for granted (or, at least, you seem to take it so) that the minister earns his money by the *sermon* he preaches on *Sunday*. Sometimes, where they can not do any better, they employ a minister to come in the middle of the day and stay just long enough to preach a sermon, and then go away, not seeing during the week the people he preaches to, knowing little or nothing about them. I believe, however, that such kind of preaching, as a rule, does very little good; and the preacher, again, as a rule, gets very little *pay* for it. But perhaps it is better than no preaching at all. In our place of worship we pay our pastor $1400 a year, and, of course, he preaches to us every Sunday. He was engaged with the understanding that he was to preach one sermon on Sunday; but he commenced almost immediately giving us an evening sermon besides. And then he presides over at least two prayer-meetings; makes it his business to be on hand promptly at every religious gathering; hunts up, gets acquainted with, and exhorts toward rightousness, every person belonging to his flock; looks after and finds out who lives in every house in town; and if there is a family or person who does not attend church somewhere else, he makes it his business to give such person or persons an earnest, faithful exhortation in the line of our text. Besides this, if anybody in his whole parish is in trouble he expects to be consulted. If he finds out about the trouble, many times he does not wait to be invited to lend a helping hand. Not only is he a spiritual adviser, but he has at least excellent wisdom and judgment concerning medicine, law, finance, and almost every thing else that concerns ourselves and our neighbors. I do not mean that he *meddles* with what naturally belongs to law, medicine, or banking; but he is always ready to give you his sympathy and kind brotherly advice in all these matters.

Just after my conversion I became firmly persuaded that there was not *another* pastor in the whole world so helpful and kind as my good brother Reed. When God called him, however, to wider fields, another faithful messenger of righteousness took his place, and I soon began to feel that brother Reed had almost a duplicate. As the years passed by, something like half a dozen ministers of the gospel have presided over us, and I should almost feel hurt if any of my friends should compare them and call one better than another. My opinion, after very close and intimate acquaintance with these friends I have spoken of, is that they have fully earned every cent of their salary. In fact, for most of them we have voluntarily advanced the pay while they were with us. Two or three were offered *more* pay if they would stay, and they did not go away either *because* they could get better pay somewhere else. I knew them well enough, and knew the circumstances well enough so that I could state very positively that they were not working for the *money* there was in it. My good friend A. T. Reed, whom I have mentioned above, certainly did not expect to make any money in laboring with *me* as he did at that memorable time 18 years ago. He was not *hired* to do it, and I presume most people would have said at the time that he was wasting his breath and his prayers. In fact, he rather went out of his way; but in so doing he gave you the Home Papers, which so many of you tell me have been helpful to you.

Now, then, good friend, what do you think of the sort of men who often say, "Well, the world is about all alike; when we get right down to it, they are *all* after the almighty dollar"? Somebody, perhaps, gently suggests, by way of remonstrance, "Are ministers and teachers *all* after the almighty dollar?" But the one who makes the proposition very often says, "Yes, sir—every last one of them. When you get right down to it, the preachers—the whole of them—are preaching for the *dollars* and for nothing else."* God pity the man who believes such a doctrine as that. Yes, God pity the man who is so hardened and bitter that he can even give *voice* to such sentiments, even if he does believe them. My answer, then, to your first paragraph, is this:

It is right for the preacher to preach, or work, if you choose, on Sunday; for God has said, "Remember the Sabbath day to keep it holy;" and our good friend the pastor is kind enough to exhort us to holiness on that day, when he can have us all together, even if he does work during the week harder than many of us. One day in seven, we as a people have consented to lay aside business and week-day cares, in order that we may better consider matters pertaining to the kingdom of God and his righteousness. Under such circumstances it is eminently fitting that the pastor of the church should lead us and teach us, and exhort us to follow godliness during the week.

Your second paragraph calls for a little more attention. Is it right that ministers' children should wear better clothes and have a better education than the children of his flock? My opinion is, that it would not be exactly the thing for ministers' children to wear better clothes than *any* of the other children in the parish; and my experience is, that such is not often the case. We should expect, however, that ministers' children would be as well brought up, and that they would certainly take as good care of their clothing, etc., as any of the others. In point of education, we should be rather ashamed to permit the minister's children to be behind the general run. We might say the same of clothing and manners. Friend B., you would not want God's holy house to be very much poorer than the business places in your neighborhood. In fact, it ought to be the other way. The man who has not sufficient reverence for God's holy place to want it neat, tasty, and orderly, ought to be ashamed of himself; and the same would apply to the minister. In a neighboring town the minister was so poorly paid that he used to work at almost every thing during the week. One day he was plastering his house, and a spruce young fellow came for him in order that he might be married to his girl. When he found that the chap covered from head to foot with mortar was the preacher, he went away offended. He did not propose to have so sacred a ceremony, so far as he was concerned, per-

* People who make remarks like the above ought to remember that people are likely to conclude they judge others by themselves.

formed by any one who looked as that fellow did. The young man was at least partially right. It was not the minister's business, however, to be ashamed of himself. It was the business of the people who employed him year after year, and who neglected to pay him as he ought to have been paid.

Isn't your second paragraph sufficiently answered? Friend B., you go right straight and get acquainted with your pastor; follow him about from morning till night, all through the week; and if you do not decide as I have done, that he earns his money as honestly and as well as anybody does, then I shall be mistaken.

I am glad to see your concluding paragraph, and that you are trying to do the right thing. If I have not answered you sufficiently, have I not given you some helpful suggestions in the line? And don't you believe we shall have better homes and better neighbors when we cultivate such a feeling toward our spiritual leaders as I have pictured to you in these brief remarks? Remember, I once stood where you now do. For many long years I found fault with ministers—called them lazy, etc. May God forgive me; and may the uncharitable comments on the good clothing that every community absolutely demands that the pastors of their churches should wear be forgiven. Wouldn't it be best for all of us—carpenters, farmers, schoolteachers, and ministers, if we really and truly made it our business to seek the kingdom of God, and his righteousness, leaving it with God and the great wide world to pay us for our services what we ought to have? Oh! you do not know how much happier and pleasanter I have felt since I have been working—not for money, but for God's kingdom; and the astonishing part—at least to me—is, that, as soon as I have forgotten to look first after the money part, God has seen to it that "all these things" have been added unto me and mine most abundantly. May his holy name be praised.

Even so did the Lord ordain, that they which proclaim the gospel should live of the gospel.—I. Cor. 9: 14.

NOTES OF TRAVEL.

ON THE WHEEL—CONTINUED.

When I neared the well I was informed that I would have to have a permit in order to get over there. There was so much oil on the ground, and covering the surface of the water that stood in hollows, and even floated down the creek, that they were very careful who was permitted to go around the derrick, on account of the danger of fire. When the managers discovered that it was A. I. Root who was making inquiries, they not only gave me the permit, but went over and showed me around. No tanks had as yet been put up to save the oil; and during the recent rain of sixty hours, a great quantity of it was washed down the stream. They had drilled through ever so many hundred feet of solid salt; but as they deemed the oil they have struck to be of more value than the salt, their attention has been turned to the former.

There is one thing that is particularly pleasant to the wheeler all through Summit County; and that is, the beautiful pure soft water almost everywhere you go. In some places the springs are so plentiful along the hillsides, that at almost every farmhouse there is a watering-trough, with a running stream of pure water right out along the roadside. I reached the old home of my childhood in Mogadore, Summit Co., in the middle of the afternoon (feeling but little fatigued after traveling more than 40 miles); but the matters that particularly interested *me* there would not be of so much interest to the readers of Gleanings.

At Tallmadge I called on my relative, Mr. Wilbur Fenn. He was out plowing a piece of ground just 100 rods long; and the minute I looked down the furrow he had just turned, I uttered an exclamation of surprise and delight. Do you know why? This hundred-rod furrow was about as straight as you could draw a string. It was of even, regular depth its whole length, and the fine soft loam rolled over exactly the same way from one end of the furrow to the other. In fact, the field was almost ready to plant just as the plow left it. My cousin, young Fenn's father, explained to me that one reason why his son did so nice a job just then, was that he was teaching his hired man how to plow straight. Some of you may say that a crooked furrow would give just as good a crop as a straight one. Well, I suppose it might under some circumstances; but look here, my friend. The man who plows a straight furrow like that, does every thing else accordingly, in making his preparations for a crop. The ground will be so well fitted, and the planting so accurate, that a good hill of corn will grow on every foot of the soil, where there is room for a hill. There will not be too many stalks in a hill, nor too few; and there will not be any good *spots* in the field, and poor spots.

Young Fenn is in Terry's neighborhood, and he has caught on to the ideas of good farming that have been so vehemently taught. Let me tell you something about how hard he has worked to get his ground so he could plow such a furrow. First, all the trees and stumps were disposed of; then the rocks and stones. Why, this same ground has been farmed for perhaps fifty years; and when young Fenn got hold of it he commenced getting out every stump and stone that would make the plow dodge. In one place, after digging out a stone that broke his plow-point, he found *six* old broken plow-points in the same spot. His predecessors had broken their plow-points, one after another, and contented themselves with putting in a new one and going ahead and leaving the cause to do the same thing again, year after year. Of course, the ground is underdrained; but even then I could not comprehend how that soil should turn over so beautifully soft and even and fine; but he explained it by saying the field was fitted for oats when that sixty-hour rain came; but the water settled it down so solid and compact that he decided he would not undertake to get the crop under in such conditions. Therefore he plowed it all over, and was going to put in corn.*

Just as I was stepping into the buggy to leave, our young friend said we must hold on just long enough to see his potatoes in the cellar. Although it was the last week in May, he had not yet planted them, and did not propose to plant them for some little time. His forte is late potatoes, and he does not undertake to put in wheat after them, as friend Terry does. In fact, he has a rotation of his own fashion, suiting his own needs. The cellar was closed up as

* You see, the point is that an expert farmer will not undertake to produce a crop unless he has the conditions something near what he thinks they ought to be. I have frequently had ground fitted ready to plant, just as he did; but I went ahead and put in the seed, thinking I could not very well help the matter. Of course, this field 100 rods long was doing things on a little larger scale, and it would be rather expensive business to go ahead when there is a strong probability of failure over so large a piece.

tight as a bandbox. Not a bit of air nor light could get in. A hundred bushels of potatoes which he had selected and saved for planting were piled up in the cellar; and so cool was it kept that scarcely a sprout had begun to show, even though it was May. He raises principally the Empire State; and every time I go past his place late in the fall I enjoy looking at the bright clean green foliage that is sure to be seen in his potato-field just before frost. Somebody told me that he had last season about 1400 bushels, for which he received over $1400. You may say he was lucky in having a big crop when there was a general scarcity; but I tell you it was more *hard thinking* and *prompt acting* at just the right time than it was *luck*.

A little further on we came to the home of L. B. Pierce, of Tallmadge, O. The initials L. B. P. are so familiar to all who read our agricultural papers that I shall hardly need to introduce Mr. Pierce. He is a considerable grower of strawberries as well as of other small fruits, and his particular line of work seems to be in putting strawberries on new ground just reclaimed from the forest. The land in his vicinity is worth perhaps forty or fifty dollars an acre—that is, some of it can be bought for that; but after friend P. has cleared it of trees, stumps, and stones, and got on a crop of strawberries, it would probably take several times fifty to buy it. The fresh woods dirt mixed with the sandy loam looked so soft and rich and inviting that one could scarcely resist the temptation to get down on his hands and knees to get out the weeds and fix each plant in nice trim to push ahead. Out of many thousands of strawberry-plants put out at just about the right time in spring, he is going to have hardly a missing plant; and the way the great bushy roots have pushed out in the black leafy mold is enough to make anybody enthusiastic.

Friend Pierce has not only in his writings but by actual practice demonstrated the advantage of having the grower deliver his berries straight to the consumer. His chief part of the berry business during fruiting time is to sell them. His oldest boy looks after the picking and general work. How could a strawberry-grower get along without children of his own? In fact, I don't see how anybody gets along very much in this world in the way of building up a business unless he has children to back him up and encourage him. Every grower has ideas of his own, and methods and tools of his own; and it is quite a satisfaction to go around and see different enterprising and progressive men, and compare notes. Friend Pierce is a most untiring writer for the different agricultural journals; and his writings are all from practice, with very little theory mixed in. This is one reason why they are so practical and helpful. As one goes about on the grounds he sees here and there a hundred different things that have been described in the papers. When I got around to my cousin's, D. E. Fenn's, Tallmadge Center, it was raining. Perhaps I might explain that D. E. Fenn was almost ahead of friend Terry with his covered barnyard. Some years ago he decided that he did not want his straw, his cattle, his manure, nor any thing else, out in the weather over winter; so he moved two old barns up near each other, and then made a great roof so as to unite and cover both. Under this immense roof he puts all his straw, hay, grain, live stock, and every thing else, and has room for all his manure, where he keeps it on a plan similar to Terry's with the covered barnyard. It was also pretty nearly noon. I begged the privilege of taking my accustomed nap just before dinner, while it rained. Just as soon as I hinted my wishes I was ushered into one of the daintiest little sleeping-rooms you ever did see. By the way, I wonder whether anybody else has felt as I have, that it is a real luxury to close your eyes for sleep amid *pleasant surroundings*. I do not know whether you, my friend, are in the habit of thanking God for your pleasant sleeping-room or not; but if yours is a fair sample of those that are placed at my service on my wheeling raids, I think you ought to thank God this minute for your sleeping-room, and for the dear wife who keeps it all the while so tidy and trim. Amid the patter of the raindrops I bade adieu to consciousness, and rested. I have often said that nobody can relish a drink of cool spring water as well as can the wheelman or wheel-*woman*, if you choose (for wheel-*women* are crowding close upon our heels). And now I wish to say that one who has never ridden a wheel can hardly appreciate the delicious sense of a restful sleep. In just three-quarters of an hour, as it was the day before, I was fully alive, with all my energies and strength at their best. Why, of late it just makes me feel happy to swing my arms and inflate my chest. I feel proud of the strength that God has lately seen fit to give me. Information that dinner was just ready was another piece of news that made me inwardly thank God; and in a minute more I was invited to thank him out loud. My cousin commenced making some apology by saying that she did not happen to have any thing in the house that morning ready, and so I would have to put up with—just at this juncture I stopped her, telling her that I was just thinking that Mrs. Root must get the recipe for that delicious potato soup. Well, we had so much talk about it that I don't believe I got the recipe in full; but she said the soup was made of potatoes and mutton broth. May be your wife knows how to make the same kind. If she does not, sister Fenn will have to explain.

Had it been in Medina County, I should hardly have dared to start out on the roads. But they have coal-mines around Tallmadge, and I noticed that the walks along by the roadside were made of slack coal. Now, there is not any thing nicer to run a wheel on, to my notion, than walks of this kind. Fine gravel, without any stones larger than a bean, for instance, will do almost as well; but loose pebbles are rather detrimental. For a while it was rather too wet to get along; but I followed the roadside paths, executed some gymnastic maneuvers now and then when the foot-path crossed a ditch or went down steps, but on the whole I got on very nicely for several miles; then the roads began to get dryer and dryer, and pretty soon it was dusty again. Part of the way between Cuyahoga Falls and Hudson they have a graveled road, made some two years ago. I tell you, wheelmen can appreciate roads like that one, through a sandy country, or during a muddy time in any country. The minute I struck that graveled road it seemed as if I should fly the rest of the way. I actually did run for several miles *faster* than the wind. For instance, when I started on the graveled road there was quite a little breeze blowing against my back, from the south. I said to myself, "Now, old fellow, you are not going to have any air at all this very hot day;" and when my speed had reached exactly that of the wind, there was, as I expected, no breeze, and it was a dead calm. As the road was so nice, however, I put on a little more strength, and soon doubled my former speed. Then a delicious cool breeze sprang up from the *north*—that is, it seemed so. I slacked up, and then there was no breeze at all; then I alighted to prove it, and there was the same gentle breeze, clear and distinct, from the south. So you see I

rode faster than the wind, and that, too, without very much trouble.

Finally up behind my back came a thundercloud. With the wind pushing me from behind, I could almost run away from the storm; but it finally drove me into the woodshed of a spacious farmhouse. The good lady, as soon as she saw me rushing in on my wheel, invited me to come inside; but when I told her that I rather preferred the open air during the thunder-shower, she brought an easy-chair for me to sit in. Did you know, my friend, what lots of kind people there are in this world, especially if one only behaves himself even half way in a Christian-like manner? Then there was an old-fashioned well-curb, with its "old oaken bucket." Why, if everybody liked water from the well and spring as well as I do—that is, when I am riding a wheel—there certainly would not be much longing for wine, beer, or cider.

As soon as the rain let up, I pushed on for friend Terry's. The roads were somewhat sticky, but his home was not far away, and you know I have had considerable drill in running a wheel over slippery places. My riding over the ice and through the slush and snow all winter long was not without its advantages. Even though the wheels should slip and slue, I have learned to keep my seat pretty well. Another thing, the roads were all the while drying off, so that, if I can manage to keep up on the start, I pretty soon get along very well. In this case, however, it had rained much harder toward friend Terry's than at the point where I started, so I was soon in real trouble. There were no houses near, and the mud was so soft that it was entirely out of the question. I had nothing on my feet but thin cloth shoes. I always prefer these for wheeling. I could not walk in the mud, and I could not very well walk in the grass; but after a little experimenting and considering I found I could run the wheel in the grass where the ground was decently level. It was a good deal like floundering along, however, until I reached a point in the road where friend Terry's farm commences. You see, he has gone and fixed up the roadsides, and made them like a lawn. Another thing, he has graveled the road where it goes through his farm, so while the mud began to fly from the rubber tires I began to smile through my wetness. The wet grass and rain together had pretty thoroughly drenched my feet. I was hoping I could get into the covered barnyard, or somewhere out of sight, and slick up a little before presenting myself to the women-folks. Whom should I meet, however, just before I got up to the gate, but one of the Misses Terry? I was just beginning to feel embarrassed when she took in the situation, and then she laughed and I laughed; and when I concluded that it was nothing but a laughing-matter I felt considerably better. Pretty soon friend Terry informed me that he had just put a letter in the postoffice, requesting me to put off business and come right out there as soon as possible. So you see I had been specially invited, but did not know it. I always enjoy being prompt; but this time they said they thought I had outdone even A. I. R. himself.

Now, friend Terry's dooryard is always pretty; and after the nice summer shower, I expected it to look radiant; but I was not at all prepared for the sight that met my eye as I came through that front gate. A group of rhododendrons and azaleas was in the front yard near the house, and the latter were just in full bloom. They were clothed with flowers to such an extent that the blossoms enveloped them like a garment; and each blossom seemed to "blush at the praise of its own loveliness." I do not claim that the latter is original; but no one could appreciate fully such a description until he had seen that group of azaleas. Why, I did not know that the whole wide world contained any thing so bewitchingly beautiful. I have visited fine residences in the great cities and on the Pacific coast; I have seen greenhouses at their best, filled with the rarest and most costly plants the world affords; but I never saw any thing that took hold of all there is in me to appreciate and enjoy, as did that sight. If Mrs. Root were here she would say as she did about the nice dinners and the nice bedrooms, that the wheel, the perspiration, and the flow of animal spirits, had colored up things. Well, may be the wheel and my pleasant rides had something to do with it; but, dear friends, let us rejoice that it is not an unhealthy nor unnatural exhilaration. Perhaps I have earned it somewhat by giving so much of my life to indoor work.

In the back of the yard there was another plant that got hold of me something like the azaleas. The latter cost quite a lot of money. They retail at $1.50 to $2.00. By taking half a dozen, the group I saw cost only $1.00 each; but when I asked friend Terry how much he paid for that Vanhoutea spirea, what do you think he said? Why, it cost *only 15 cents.* His plants all came from the nursery of Storrs & Harrison. He went there and picked them out himself, instead of sending by mail or express, or patronizing a tree-peddler. I think there is a moral there too. If there is a nurseryman in your vicinity, go and visit him; get acquainted, and then pick out your stuff, instead of sending a thousand miles away to somebody who sends out gorgeous catalogues. No offense is intended to the catalogue men; they are all right when there is not somebody in that line of business near your home.

I declare! I believe I shall have to wait again, until our next issue, before I tell you about friend Terry's farm in the latter part of the month of May, and what it was he was so anxious to have your humble servant see at just exactly that time. It was not azaleas, although I would have cheerfully made such a trip to see those alone.

Continued in our next.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

GARDENING IN JUNE.

Strawberries are now in their height, and we are gathering ten or fifteen bushels a day. I was once inclined to be skeptical about the need of perfect blossoms among the imperfect, to insure perfect fertilization; but I have got all over it now. By some blunder we had a fine row of Edgar Queens, with no perfect blossoms within several rods of them; and although there is a wonderful crop of magnificent berries—that is, magnificent in size, almost every one is knotty, gnarly, and ill shaped; and, in fact, there is a general difficulty with all of our imperfect berries in this respect, this season, unless they stand very close to a row of Jessies, or some other berry that produces a profusion of perfect blossoms. And, by the way, Michel's Early is coming to the front nobly, not only as an early berry but as a fertilizer; it has given us our first berries, and quite a good many fine large ones; and the one row that we had decided to try just one more year before plowing them up, has given us a good many bushels of fine-looking berries, excellent in flavor and perfect in shape. We are going to plant the variety

largely, and put it in our price list. This illustrates an important point: For three years we have had unfavorable springs for all extra-early berries; and this present season has been the first to let it show what it could do. All extra-early strawberries should be thinned out, or planted out far enough apart so the sun can have free access to color up the berries early, letting them grow without a mulch. This year we sold berries fully a week before our nearest competitor had picked a bushel. He has none of the very early kinds, and his berries are mostly in grass and weeds. These latter save to some extent the expense of mulching, but they make the berries late. For our extra early we want the ground free from mulch or any thing else that would shade or cover the surface. Then they should have good cultivation, with plenty of room between the plants, as I have explained. This latter is some trouble, but we get almost double the price for our extra-early berries, and have no trouble in finding customers. Just now very fine berries are retailing on our streets for 8 cts. Our Timbrell strawberry has finally got under way, and is growing with wonderful vigor—that is, *two plants* are. Two more are going to make a live of it, and that is all we have to show for our dozen. The last half-dozen sent us were remarkably large, strong, healthy plants. By some bad management, however, they were kept out of the ground until the plants had begun to send out white shoots, like a potato in the dark. We have bought quite a quantity of nursery stuff this season in this same predicament. It looks as though it had been weeks or months in a cellar or cold storage, or something of that sort. Very likely it is less bother to keep plants ready for shipment in this way, but they do not *compare* with plants dug right out of the ground the day they are to be shipped; at least, that has been my experience.

NO BEES NO STRAWBERRIES.

Berries are about all gone, and I think that, on an average, we have had about a good half-crop. I am more convinced than ever that, if cross-fertilization is not performed by the *insects*, there will be no perfect crop of strawberries. Half of the present crop was not fertilized, and did not develop. R. STEHLE.

Marietta, O., June 15.

TAKING SOME OF OUR OWN "MEDICINE."

The following is just the kind of letter that we like to get—that is, when things we send out do not come up to what they should do:

Mr. A. I. Root:—In looking over June GLEANINGS, page 452, I saw a note from Henry Martin, followed by your advice what to do. Now, friend Root, we have been taking your journal almost from its infancy, and have been dealing with you more or less every season, and have no reason to complain; but as you were advising dealers to ship their goods properly, I thought I would advise you to take some of your own medicine. We ordered fifty Haverland strawberry-plants, ten raspberry-plants, and half a pint of Burpee's bush lima beans. When the plants came to hand they were heated. We opened them out that night, and laid them in the cellar until the next morning. Seven of the strawberries are all that I got out of the fifty, to make even a start, and one or two raspberry; and the beans, I should like to know what is the matter with them They seem to have no vitality at all. I planted about two-thirds of them when I planted my first beans, and not one ever sprouted; the rest I planted later, when I planted my pole limas. My own are up nice, while there are not half a dozen of the bush limas up, and they seem withered. I can not account for for it unless they were some that never matured.

Owaneco, Ill., June 6. MOLLIE O. LARGE.

I am surprised to know that the strawberries were heated. We have claimed that our moss packing was of such a nature that it would not heat. Your report, however, seems to indicate otherwise. I presume it was this heating that made all the trouble in strawberries and raspberries. We will credit you with the value of the plants you lost, in something else, or replace them, as you may choose. In regard to Burpee's bush lima, we have seen a report in one of the agricultural papers, quite similar to yours, in regard to their vitality. You may remember, as you have taken GLEANINGS so long, how much money I squandered on bush limas when they first came out. I gave $75.00 in gold for a single handful of bush limas; and I abandoned them almost solely because we could not get them to mature in our locality. My experience indicates, too, that both the Burpee and the Kumerle bush limas are very slow of germination. Unless the weather is just to their notion they will rot in the ground or grow very imperfectly. This statement will be referred to Burpee himself; and if he does not make the matter satisfactory, we will. Other friends who have had like experience will please report and let us know what will make the matter satisfactory. And now, my good friend Mollie, I want you to bear in mind that we folks here at the Home of the Honey-bees do not propose to offer "medicine" to *anybody* that we would not take ourselves.

HEATING HOT-BEDS BY STEAM; ALSO SOMETHING MORE ABOUT THE BUBACH STRAWBERRIES.

Mr. Root:—How many feet of hot-bed, linear measure, will a ten-horse-power boiler heat, beds 6 feet wide? Have you any second-hand boilers to sell, or any new ten-horse-power upright boilers.

You spoke of the big Bubachs. I have been selling them off the wagon for nearly three weeks. Some of them measure 5¾ inches around. You see, I got my plants of you. We have sold about $300 worth in three weeks. The people are pretty well worked up over the berry-business here. My daughter, 14 years, and my son, 13 years, run the wagon every day. We are having a big trade. J. W. NICODEMUS.

Newcomerstown, O.

[Friend N., I am sorry that I can not answer your question; but a ten-horse-power boiler would warm a tremendous amount of beds—I should think a quarter of an acre, without any trouble. We have no second-hand boilers at present, but we could sell you a ten-horse-power boiler for $175. All who have been using steam through drain tile, for warming hot-beds, have expressed surprise that so little steam went so far. If any of our readers can give us any facts from experience, in this matter, we should be glad to get them.]

THAT FLAT PEACH.

Mr. Root:—The flat peach spoken of on page 491, GLEANINGS, is "Peento" or one of its seedlings. It was imported from China many years ago, but was in some way lost, and was again introduced into the country from Australia in 1869. It is sub-tropical, and succeeds only where the orange can be grown. The moss in which it was packed is the Spanish moss, common in Florida, Louisiana, etc.

W. W. IRWIN.

Dept. of Ag., Washington, D. C., June 24.

THE MUSHROOM SPAWN WE HAVE BEEN SELLING.

Dear Sir:—The mushroom spawn I purchased of you some time since proved entirely worthless, not producing one plant, although I fol-

lowed closely the directions accompanying the same. Although I produced an inferior kind from spawn taken from my own manure-heap, in each place I tried yours in parts of the same beds. Has any one to whom you sold this spawn, or you yourself, succeeded in raising mushrooms with this spawn? If so, will you tell us through GLEANINGS exactly how it was done? ALLEN BARTOW.

Milan, O., June 23.

P. S.—I have kept bees for over thirty years; never knew so much white clover or nectar to be gathered so rapidly before.

[Friend B., to tell the truth we have *not* as yet succeeded in getting any mushrooms from the spawn we purchased of Johnston & Stokes, just such as we sold you; nor have we had any report from any one who has succeeded. Knowing Johnston & Stokes to be an old and reliable firm, we purchased the spawn and sent it out before we had time to test it ourselves. You know it takes a much longer time to test mushroom spawn than it does to test ordinary garden seeds. May be others have succeeded. We hope so. We have just one other complaint like yours. If this notice does not succeed in bringing some report of success, we shall have to go back to Johnston & Stokes.]

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.
ILLUSTRATED SEMI-MONTHLY
36 PAGES 7×10
$1.00 PER YEAR.

Lay up for yourselves treasures in heaven, where neither moth nor rust doth corrupt, and where thieves do not break through nor steal.—MATT. 6:20.

WE never saw more white clover out than now.

DID you ever! G. M. Doolittle recommends box hives for farmers! Well, we do not know but we would too, for the class he speaks of.

W. L. COGGSHALL, that extensive bee-keeper of West Groton, N. Y., lost so heavily in bees last winter that he ordered and has received a carload of bees shipped from the South, to replenish the loss. Other bee-keepers in his vicinity have lost, so we are told, all the way from 65 to 70 per cent of their bees.

A PORTRAIT and biographical sketch of C. H. Dibbern appears in the last *American Bee Journal*. Mr. Dibbern has been one of our old correspondents. Although not a prolific writer, yet what he does have to say is valuable, and has pith in it. We were surprised to see that Mr. Dibbern, although 53 years old, looks so young.

WE would call special attention to our answers to questions from beginners, that are now running consecutively in GLEANINGS. We have taken more than ordinary pains to answer the questions correctly, and we believe that some of the veterans, as well as the beginners, will find pleasure as well as profit in their perusal. Whenever we make errors we should be glad to be corrected.

A FEW days ago Mrs. Atchley mailed us four laying queens, with about a dozen attendants, *all in one cage*. Two of the queens came through alive, and the other two were dead. We should have expected that only the survival of the strongest would have been left. Whether the two that are alive, and seem to be getting along peaceably, agreed to disagree, or whether these same two killed the other pair, or whether the other two fought between themselves, and both fell mortally wounded, leaving the other pair, is hard for us to say. We returned the queens to Mrs. Atchley to-day, June 14, and will doubtless hear from her later as to whether the two surviving queens agreed to disagree all the way back. If queens would *only agree*, it would be a very economical way of sending four or five together; but they don't—at least, we never supposed they would when sent by mail in this way.

REPORTS ENCOURAGING, AGAIN.

IN another column we reproduce an old department that almost, during these past seasons of failure, had become extinct—that is, Reports Encouraging. In that department we give in this issue quite a fair average of hundreds of reports that are coming in, saying, with scarcely an exception, "Bees are booming;" "Never had such a honey-flow," etc.; and it begins to look as though the spell of poor seasons that we have had is broken, and the old-time honey-flows from clover were coming once again. Is it possible that we are going to have one of our old-fashioned honey-flows? We think it is quite probable. In order to get at a correct status of the situation we hope our subscribers all over the United States will send us reports thick and fast as to what bees are doing. It is to the interest of every honey-producer to know whether the honey-flow throughout the country has been heavy or light.

COWAN'S GUIDE-BOOK IN SPANISH.

ON page 447 we said that we knew of no bee-book printed in the Spanish language; but we have just noticed in *El Colmenero Espanol* an advertisement of Mr. Cowan's celebrated work, translated into that language by Mr. Enrique de Mercader-Belloch. Mr. Cowan also, in a card just received, calls our attention to the fact. What we really meant to say was that we knew of no bee-book written by a native Spaniard. Considering the natural advantages of Spain over England, in its flora, we certainly had a right to expect a bee-book from some of their native writers, rather than depend on a mere translation of a foreign work. We shall be glad to notice any advance that our friends in Spain may be making in bee-literature. It seems strange that the French should have such an inexhaustible amount of literature on bees while their neighboring and adjoining nation has practically none. The advertisement in question says that this is the only bee-book in Spanish, and that Mr. Cowan's work is printed in French, Russian, Swedish, Danish, Spanish, and German.

QUEENS BY MAIL FROM ITALY; EGG CANDY VS. GOOD CANDY.

Besides the consignment of imported queens by express, noticed elsewhere, we have been receiving, within the last three or four weeks, consignments of half a dozen imported queens by mail. The loss was so small that we have about concluded that hereafter we shall have all our queens come by mail from Italy; and had it not been for the fact that we put in the egg candy with the Good (or Scholz) candy, each kind in separate holes of the cage, we believe that all the queens would have come through alive. As it was, many of the cages—in fact, all of them—had a particularly foul and sickening odor. While the queens themselves appeared to be perfectly healthy, the bees were in the last stages of dysentery, and, of course, soiled the inside of the cage. Why the dysentery? We can asign no other cause than that

the egg in the one kind of candy proved to be unwholesome. Examination of the cages shows that, while the Good candy was used liberally, the egg candy was eaten of only sparingly. This seems to show us that, even though the bees partake of it sparingly, it is unwholesome enough to cause disease and the general foul odor in the cages. This we have never noticed before in cages having only Good candy. We are entirely satisfied now that the egg candy, although it holds its moisture, and remains perfectly soft, is not a fit bee-candy; and now having tried almost all the bee-candies ever described, we go back to the Good (or Scholz) candy, convinced that it is the best, after all. If we were to add any thing else to the equipment of the cage it would be a water-bottle; and on long distances we are of the opinion that, especially in hot weather, the water would tend greatly to bring the bees through in good order. We just sent a consignment of queens to Australia, some having water-bottles, and some not, and we shall wait with interest the results. It is proper to state that Mrs. Atchley has called our attention to the water-bottles, and urged upon us the importance of trying them again. We tested them years ago, with decidedly favorable results; but as the Good candy was not then in use, we concluded, after trying the new candy, that the bottles were not necessary; but perhaps this conclusion was reached a little too hastily.

BIRDS OF MICHIGAN.

Prof. Cook sends us a beautiful paper-covered book with the above title, full of beautiful pictures of most of the birds one is likely to meet in this vicinity—perhaps most of the birds of the United States, or, at least, this portion of it. There are 131 pages, with illustrations on almost every page, and frequently two or three on the same page. The book is not only interesting but valuable, inasmuch as it behooves us to know our friends from our enemies. As an illustration, turning to the king-bird, on page 81, we find the following: "Does more good than harm, as it kills myriads of noxious insects, and, usually, but few bees. Prof. S. A. Forbes found that 42 per cent of the food of several examined consisted of insects;" and under the head of "Bluejay," a bird that has caused no little concern to bee-keepers, we find the following: "Prof. J. A. Allen informs me that he has taken a great number of the eggs of the tent-caterpillar from their stomachs in winter, in Massachusetts." There is not as much in the book as I should like to see in regard to shooting robins and other birds because they destroy fruit. I find, however, this much in the book in regard to the American robin: "Eats myriads of insects, mostly noxious species; angleworms and fruit; cherries, berries, and grapes; 40 per cent of the food of these birds examined by Prof. Forbes was found to be cankerworms." Now, in view of these reports is it not somewhat a question in regard to the policy of shooting robins, bluejays, or king-birds? In regard to the English sparrow, see the following: "Eats grain, often very extensively, especially peas; vegetables and insects; drives away our native birds; is very filthy about houses; a three-cent bounty is thinning its ranks, and often, through incorrect determination, the ranks of other sparrows; breeds abundantly; it is reported that thirty young may be reared from a pair in a season." This valuable book is sent free to all Michigan people interested in farming, etc. I do not know on what terms it may be obtained by the residents of other States. As it is sent out by the State Agricultural College, I presume information may be obtained there, or of the author, Prof. Cook, himself.

APICULTURAL NAMES; CHANGING TO BETTER ONES.

In Stray Straws for this issue, Dr. Miller says friend Pettit thinks that the word "queen-excluder" is a misnomer; that a better name would be queen-bar. The latter certainly has an advantage in point of brevity and exactness; but we question whether at this stage it would be possible to change the name. A good many of our terms, while not accurate, are very serviceable. They cause no confusion, and but little would be gained even if we could change to a more exact name. You will remember that, some time ago, it was seriously proposed to change the name of extracted honey; but no change was made—first, because no better one was chosen; and, second, custom and habit were so strong that they could not be readily overcome. After all, "queen-excluder" is not so bad. It *does* exclude the queen in more ways than one. We question whether it would be desirable to even attempt to make a change in name, solely on the ground that it would be practically impossible to do it; and, even if we partially succeeded, it would make confusion, and beginners would want to know whether queen-bar and queen-excluder were one and the same thing or different articles. The same confusion formerly existed when we used the term "broad frame" to indicate the receptacle that used to be sold so extensively for holding four and eight sections. As broad frame and brood-frame were sometimes confused in writing, we tried to change the name to *wide* frame; but in spite of all our efforts, using wide frames only in our catalogue and other printed matter, the two names continued to be used indiscriminately for the same article; and beginners who read other catalogues besides our own began to to ask whether broad frame and wide frame were one and the same thing. Under the circumstances we rather jumped from the frying-pan into the fire; and would we not be doing the same in trying to change the name of queen-excluder to queen-bar? The lesson comes right here: That those of us who make names for new articles in apiculture should be careful to select a name that is accurate and brief.

SUNDAY OPENING AT THE WORLD'S FAIR, ETC.

I confess that I do not see, at the present writing, exactly where my duty lies in regard to visiting the great exposition. It *may* be right to say that people have a right to their own opinions in regard to what we ought to do on Sunday; and some claim that it is everybody's privilege to respect the Sabbath, and to try to keep it holy or not, as he chooses. But even if we should grant *this*, is there anybody, who pretends to be honest and respectable, who believes it right to repudiate a square and fair business contract? I know there are people who wiggle out of their contracts and agreements by saying that "circumstances alter cases," etc. My general rule of conduct, however, has been to give all such people a wide berth; therefore if I act according to my feelings I should not visit the exposition at all. To tell the honest truth, I would much rather stay at home. May be, however, I ought to go. If so, I want to let *duty* and *not* inclination rule, as I have been trying to teach you.

I do not know that I am very much surprised to hear that those who have no respect for the Sabbath have been easily persuaded to go a step further and have no respect for their contracts or bargains. Judging from past experience I should say that, sooner or later, this

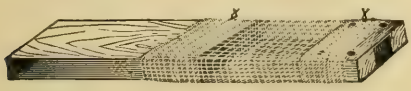
people will reap the natural reward of their transgression. Some have urged that no disaster has as yet overtaken them. I once heard of a man who habitually defied God and his holy word. He one day called the pastor of the church to look over a field of grain. Said he, "See there. I plowed that field on Sunday, and planted, and cultivated, and cared for it on Sunday; and yet, notwithstanding, I have, as you see, more than an average crop. Now, does not this prove something?"

"Yes," replied God's faithful servant; "it does indeed prove *one* thing; and that one thing is, that God does not always settle accounts with transgressors on the *first of October*."

Perhaps the World's Fair may get through until the first of October without the just judgment of an offended God and an outraged people falling upon them; but my opinion is, it will come about soon after if not before. Already the Chicago papers are beginning to admit the Sunday opening is a financial failure.

IMPORTED QUEENS; A SURE WAY OF INTRODUCING.

We have just received a consignment of 30 imported Italian queens, direct from Italy, by express. Every queen came through alive and in good order, and they are now introduced into the apiary without the loss of one. Our method of introducing with this lot was something we had not tried before on so large a number of queens. We took four or five strong colonies, and divided them up into 30 one-frame nuclei. This was done in the forenoon. In the afternoon we transferred the imported queens, without any attendants, to the Miller introducing-cage. Lest some of you may have forgotten it we reproduce the cut here. One end of this



cage is stoppered up with a long wooden plug, and the other end with a couple of blocks ¼ inch square, spaced apart ⅜ inch with two strips of tin nailed on each side. This leaves a sort of oblong plug ¼ inch thick, and the width of the cage, with a hole ¼x⅜ inch running centrally through. This hole is plugged with Good candy. To introduce a queen we simply placed the cage between a couple of combs, drawing the combs together until they squeezed against the wooden plug. In from 24 to 48 hours the bees will eat through and let the queen out. But, to return.

The thirty imported queens having been placed in as many Miller introducing-cages, we then placed one of each in each one of the nuclei above mentioned; they were then left for two days. Most of the queens were out at the expiration of that time, in good order, and they are now all out.

You see, the point is here: These newly divided nuclei will have old and young bees, and more or less hatching brood. Before the imported queen is released, the *old* bees will have returned to the old stand, and it is these old fellows that always make trouble in introducing. By the time the queen is released, there is nothing but *young* bees, including those that were brought to the nuclei stand and those that are hatched out in the interim. These, of course, all being young, will accept their new mother, without any trouble. The plan has proved to be so satisfactory that we shall employ it hereafter on all valuable queens.

FOUL BROOD; ITS TREATMENT AND CURE.

To many of our readers, and perhaps the majority, the rehearsing of much that is old on this subject may seem unnecessary; but as the information that has been gathered during the past seven or eight years, including our own experiments in the treatment and cure of foul brood, have been scattered through many different copies of the bee-papers, it is hard for the beginner and others, who have unexpectedly come upon foul brood, to get at the information quickly. We have already carefully considered the subject under the heading of "Foul Brood," in the A B C book; but as the disease seems to be breaking out anew in many quarters, and many questions are being asked, we will attempt to boil down the best that has been written, including the article in the A B C book, bringing the matter up to the very latest date.

SYMPTOMS.

Some of the brood fails to hatch. Cappings here and there are sunken and perforated at the center. On opening one of these cells there will be found a dead larva lying on one side of the cell, somewhat shrunken, and of a brownish color, varying all the way from a light pale brown to a dark brown. In the more advanced stages the brown is of the color of a coffee-berry after being roasted. In the incipient stages the brown is of the color of the coffee we drink, when greatly diluted with milk. But so far all these symptoms may be present as the result of chilled, overheated, or starved brood. But to determine whether it is the real foul brood, run a toothpick into the dead larva and then draw it slowly out. If the maturated mass adheres to the end of the pick, about like spittle, and finally the fine thread breaks when the pick is drawn back, it is probably a case of foul brood. With all other forms of dead brood, with perhaps one exception, this ropiness does not appear; but with foul brood it invariably appears. Now, there is another symptom; and that is, the odor, while not exactly foul, resembles greatly that from a cabinet-maker's glue-pot; and when the disease is pretty well advanced in the hive, the odor will make itself manifest upon lifting the cover or quilt, even before exposing the brood. If other colonies are affected in a similar way, and the disease appears to spread, it is unquestionably a case of foul brood.

In the above we have referred to an exception where the diseased larvæ have a brown color, and yet show the ropiness—a sort of malady that will correct itself, and which is very apt to appear just before the honey-flow during hot weather. It appears very suddenly, and disappears just as suddenly. It is not foul brood, because it does not spread; and, so far as we can remember from our own apiary, it lacks the distinctive foul-brood odor. We wish we knew what it was.

TREATMENT AND CURE OF FOUL BROOD.

We have tried all the medicine, acid, or antiseptic treatments. We have carefully followed the reports as given in the bee-journals for such treatments; but so far we would not advise anybody to place very much dependence upon them. The carbolic-acid (or phenol) treatment is, perhaps, as good as any; but when it is strong enough to kill the germs of *Bacillus alvei* (the scientific name of foul brood) it kills the bees too; but even then we have found the disease would reappear in from a month to six weeks after its use. It seems to work a temporary cure; but such a cure in the case of foul brood is no cure at all. In fact, it actually does harm, because, if a more effectual treatment, which we shall give presently, is used, it does away with the *danger* of infection.

Now, understand, we do not mean to assert positively that phenol can not be made to cure foul brood; but our experience and observation convince us that the average bee-keeper had better let it alone.

THE PLAN THAT WE PREFER.

Having satisfied yourself of the presence of foul brood, or even having a suspicion that the disease is in some particular colony, prepare a clean hive containing only frames of foundation. Toward night shake all the bees from the diseased or suspected colony on to frames of foundation, and place the new hive on the stand of the old one. If possible, the new hive should resemble exactly the old one; otherwise the bees will be confused, and carry the germs of the disease to other colonies. Compel the bees to use up the honey in their honey-sacs in drawing out the foundation. Don't feed for a day or so.

The diseased honey in the honey-sacs will be converted into wax, and the new product will be entirely harmless. The old combs of the old hives should be burned. Do not try to economize by melting up the wax. You will not get enough of it to pay, besides run the risk of spreading the disease all over the apiary. The old hive should be immersed in boiling water for at least 15 or 20 seconds. Splashing boiling water on it will hardly be sufficient. Painting the inside of the hive with a strong solution of carbolic acid may answer; but we know that boiling the hives is effectual. The hive, after boiling, may be used again with perfect impunity, with new colonies..

We would not advise burning colonies. Unless you burn up every bee, the few that escape will get into some other hive, and do more damage than the treatment above recommended.

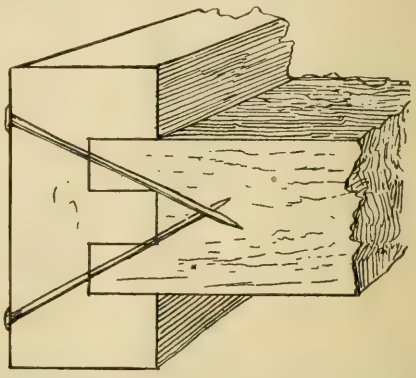
Caution.—Do not handle the infected colonies during the day, or when robbers are nosing around. Do not attempt to satisfy the curiosity of other bee-keepers who would like to see what foul brood looks like, smells like, etc. If you use any sort of brush for brushing the bees off the combs into the new hives, either burn it up or keep it for a while in boiling water before using it again on healthy colonies. Nothing but an old smoker should be used in working with foul brood. The boards of the bellows may, perhaps, with advantage be painted with a strong solution of carbolic acid; but after having rid the apiary of foul brood, burn up the smoker. Disinfect every thing where possible, that has come in contact with combs or hives that are infected with the disease, by immersing in boiling water. The hands should be thoroughly washed in water strongly tinctured with carbolic acid just strong enough so it will not quite peel the skin off the hands. A solution diluted 500 times, or the strength recommended in the phenol treatment, is hardly adequate. We have tested such strength in killing the germs grown artificially in test-tubes, and it seems to have no effect one way or the other.

If you are afraid of foul brood, cut this article out and paste it inside of your honey-house, where you can have it ready for immediate reference in case the disease should ever make itself manifest in your apiary. We have carefully tested personally the method we have recommended above, and know that it is effectual. Allow us to repeat that we have carefully tested personally the acid and medicine, or antiseptic treatment, and have found them to be practical failures. We are sure that our readers had better not try to experiment for themselves. It would be far better for them to accept the dictum of somebody else who has been through it all.

TRADE NOTES.

A NEW METHOD OF CLEATING HIVE-COVERS.

I want to suggest an improvement on your Dovetailed-hive cover—see sketch. I have made covers as you make them, and the cover



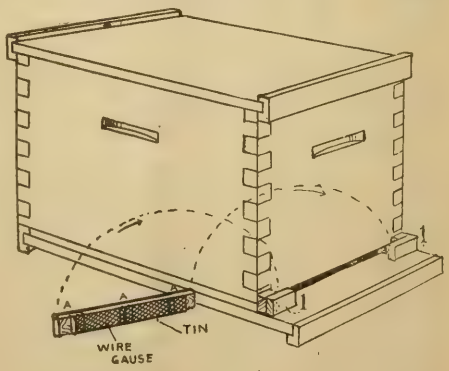
will warp if exposed to the sun, and split the grooved cleat. It would cause but a slight alteration in the machinery, and would make a much better cover; and, nailed as shown, I think it would be a great improvement.

Bowls, Ga., March 15. R. W. STEWART.

[We are of the opinion that friend S. has suggested a good idea. It is perfectly practicable, and may be an improvement over the old way. Indeed, we are seriously considering the advisability of making covers cleated, as shown, in the stock for 1894. From a practical standpoint, however, we have had no trouble from covers cleated in the way we have used right along; but as localities differ in point of climate, a warping tendency on the part of the cover-board itself might be worse elsewhere than here. We should like to hear from our subscribers as to what they think of a cover cleated as above, and whether covers on the old plan do warp.]

DEVICE TO CLOSE HIVE-ENTRANCES.

I see in GLEANINGS from time to time some device for fastening frames, covers, bottom-boards, etc., but I never saw any simple device for closing the entrance when about to move bees. I made a fastener last week. I know not whether this is new, but with me it is original.

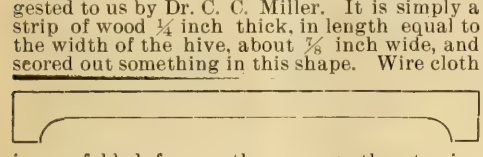


It need not cost two cents, aside from making, and may be always at hand to slip into place. If it is of any importance to your readers, give it to them. Take two blocks of wood, 2¼x1,

and ¾ inch thick: notch on one end ½x¾ in. (Fig. 1); these are to be nailed to the hive permanently, each side of the entrance (be sure to have them just far enough apart to slip your Alley drone-trap in between, or you may have trouble when you want to catch drones or queens). Now take a strip of tin, ½ inch wide by 10½ inches long; a strip of wood ½ inch square, 10½ long; 3 blocks ½x½x1 inch long; make a frame out of this; let the tin be on the bottom; cover one side with screen wire, and you will have it (Fig. 2). Slip this in before the entrance, and fasten with a nail, button, or any thing else. Dimensions may differ to fit your hive. I use the Dovetailed hive.

Harriman, Tenn. GEO. VANDERPILE.

[An entrance-screen such as you describe is perfectly feasible and practicable; but such as we employ is far simpler, and is the one suggested to us by Dr. C. C. Miller. It is simply a strip of wood ¼ inch thick, in length equal to the width of the hive, about ⅞ inch wide, and scored out something in this shape. Wire cloth



is now folded for no other purpose than to give it stiffness, and nailed across this. A nail is driven into each end, so it just pricks though. When it is desired to attach it to the entrance for moving bees, or otherwise, three or four blows of a hammer will fasten each end very securely; but the wire nail is not driven far enough so but the head sticks out, so a claw-hammer will yank the screen off at one pull. We keep from forty to fifty of these in our apiary all the time; and whenever we are ready to move bees, or bring in a lot from an out-apiary, we put a quantity of these into a basket, and the work of fastening the bees into the hives is practically nothing. Referring again to the entrance-screens of Mr. Vanderpile, we would say that, unless the movable piece fits pretty tight, it is liable to hop out on the road, and then—oh my! if the bees get out and sting the horses! Our own experience in moving bees is such that we feel that we can not be too careful in making entrances perfectly tight. One bee may result in the practical ruination of the whole load of colonies; and not only the colonies, but of the wagon, and possibly of a good team.]

ASBESTOS LINING TO CRANE SMOKERS; WHAT IT IS FOR.

THE impression seems to prevail, that our reason for putting asbestos lining in the Crane smoker was so that both the cup and nozzle could be handled with the hand. That is a mistake. It would take too large an amount of asbestos to keep the outside cool. We use just enough to prevent too great a radiation of heat, and enough to make the use of the shield and such things unnecessary. Many times a nozzle can be handled very readily; but if the smoker has been going hard, it will be too hot to be handled without protection. We use a stick, and find no trouble in adjusting the nozzle. The knack can be acquired very easily. When said nozzle is curved it can be fitted on as neatly and tightly as it can be with the naked hand. While we are about it, we might say that we have made an improvement in the check-valve. We have put it on the new smokers in stock, and are willing to send it by mail postpaid to all who purchased smokers prior to June 15. Just let us know that you have one of the new Crane smokers, and we will send you a new valve that you can put on yourself.

KIND WORDS FROM OUR CUSTOMERS.

I received the goods you sent me. Every thing was all right, and of the nicest lumber, made in the best shape I ever saw. If a person deals with you he won't need a carpenter's outfit to make them go together. JAMES PRATT.

Corning, Iowa, June 17.

I am just in from the apiary, and hasten to send in my dollar for GLEANINGS. I should have gone in by the first of May—a good thing for you that you did not stop it, for you would have fared badly at first opportunity. Wild alfalfa comes in for a big credit-mark in this section. ARTHUR HANSON.

National City, Cal., June 1.

COWAN EXTRACTOR FAST ENOUGH.

I commenced extracting honey to-day. I have extracted about 1000 lbs. The queen-excluding honey-zinc bought of you last fall, not a queen gets through. The Cowan extractor gives perfect satisfaction. I don't want any thing faster.

Musson, La., May 1. A. W. TUFTS.

A KIND WORD FOR THE WATER CURE.

I, like yourself, have been on the sick-list for the last three years; but, thank the Lord, I am getting tolerably well again, but not until I had about $500 spent in doctoring. Seeing your warm-water cure, and also taking a medical journal that recommended it so highly, I resolved to quit medicine and try it; and I derived more benefit from it than all the medicine I ever took. J. E. GAULT.

Sycamore, Ohio, June 19.

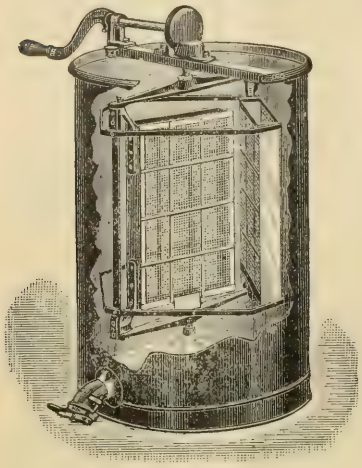
The *Ohio Farmer* gets off the following in regard to the way the Chicago people have managed:

Having cheated congress out of the money and the Lord out of Sunday, they now try to cheat the people out of 25 cents each by charging full price for half a show.

A NEW USE FOR POULTRY-NETTING.

THE grandchildren are getting to be old enough now to circulate around outdoors quite freely; and unless their mothers, aunts, or grandmother is on hand to give chase, there is no end of mischief going on almost continually. For instance, we have just had the turf cut out along our stone walk; and in place of the turf we put sifted cinders to keep the grass down. The whole thing was pronounced very nice; but as soon as Howard and Leland got a view of it they began clawing up the black stuff by the handsful, throwing it over the walk, getting it in their hair, etc.; and it looked for a spell as if it would take all their relations to keep these two young hopefuls out of the black dust. One evening about sundown, however, Mr. Calvert made his appearance with two rolls of two-foot-wide poultry-netting, some oak stakes, big hammer, saw, etc. Before bedtime two little yards were made for the grandchildren. One of these is in the shade in the morning, and the other in the afternoon. Inside of the yards they have a lot of playthings and a a great heap of clean white sand; and, oh my! but don't those boys have fun! Yes, and their mothers can leave them 15 minutes or even a whole hour without having to go on a general hunt to find where they have gone to. When they get able to climb over that two-foot fence, I suppose something else will have to be done; but at the present writing it has filled a "long-felt want." While they are playing in the sand-pile they have on some plain and simple clothing. After they have tossed the sand all over themselves and every thing else until they are tired, they are treated to a bath, and dressed up.

A Grand Success.



New Cowan Reversible Honey-Extractor.

May be Reversed without Stopping the Machine.

Strong, well made in every respect, light, and of convenient size. The can is but little larger than that of the Novice. The gear is beveled, and covered by an iron shield, and the crank outside the can. Frank McNay, of Mauston, Wis., a bee-keeper who produces tons and tons of extracted honey, says of it:

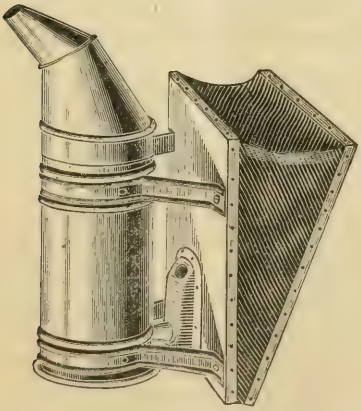
After carefully examining and trying the Cowan extractor, I have failed to find a weak part, and I do not hesitate to say that it is the best extractor made, both in regard to convenience and durability, and I shall replace all of my five machines with the Cowan as soon as possible.

It is indorsed also by J. F. McIntyre, an extensive extracted-honey producer in California; by W. Z. Hutchinson, Dr. C. C. Miller, Dr. A. B. Mason, and others.

Price all Complete, Japanned and Lettered, for L. Frame, $10.

A. I. ROOT, MEDINA, OHIO.

NEW CRANE SMOKER NOW READY.



Smoking Capacity and Strength of Blast Simply Amazing.

The **New Non-Smoke-Sucking Check-Valve,** by which a great blast is secured and the bellows kept clean, and the **double lining of Asbestos and Sheet-steel,** by which the fire-cup and nozzle are kept from becoming uncomfortably hot during usage, are **DISTINCTIVE** and **VALUABLE** features alone possessed by the new implement. It would be impossible to tell of all its unique features, and so we say, try it and fall in love with it.

Price, with 3½-inch fire-cup and curved nozzle, by mail, $2.00; by express, $1.75.

If your nearest dealer in supplies does not keep it, write to the authorized manufacturer,

A. I. ROOT, Medina, Ohio.

N. B.—Don't forget that we are headquarters for all kinds of bee-keepers' supplies. Our new 1893 catalogue of 52 pages now ready for mailing.

WE OFFER

COMB FOUNDATION

WHOLESALE AND RETAIL,

AT VERY LOW PRICES.

Satisfaction and all work guaranteed.

Price List and **samples** will be ready before the next issue.

Send for them.

Prices will range from 36 to 56 cents per lb., f. o. b.

BEESWAX WANTED. Write for prices.

W. J. FINCH, JR.,

31 E. Monroe St., 5-10db **Springfield, Ill.**

☞ In responding to this advertisement mention GLEANINGS.

75 cts. each for untested queens from best imported mothers. **W. C. Frazier, Atlantic, Iowa.**

Good News.

For years I have not been able to dress myself; and for many weeks have had to be lifted out in my bed and chair. Under the pressure of necessity I have invented a device by which a child can put me to bed or take me up. The device can be used in any room or part of a room. A practical, simple, cheap device. Invalids will do well to correspond. I can help you. You can help me. Address

A. BEESON, Loveland, Col.

Friends,

I am now ready with those nice Italian queens, which I will sell at $1.00 for untested; tested, $1.50. Bees by the lb., $1.00; 1-frame nucleus, $1.25; 2-frame, $2.25.

Mrs. A. A. Simpson, Swarts, Pa.

Eggs and Plants. Several varieties. Best quality. Any quantity. Finely illustrated catalogue free. Address

GEER BROS., St. Marys, Mo., or H. B. GEER, Nashville, Tenn.

"You Push the Slide; Nature Does the Rest."

The first *perfect* and *practical non-swarming* plan that has ever been brought to completion is *found at last*. Nothing like it ever done. I worked the plan on ***100 colonies*** last year (1892), and I do not make any statements at random in my circular, as each point has been fully tested. Tells you all about it. No hunting or caging queens, cutting cells, moving hives, or even opening the brood-chambers at all during the honey season, etc., etc., ***and more honey with no swarming.*** Get into line and "keep up with the procession," or you'll get left. The device will be put on the market within the reach of all; or, if your dealer does not supply them yet, they may be ordered of me by express or freight at the following prices, complete: 75 cts. each; $5.00 per 10; $40.00 per 100. By mail, 35 cts. extra. As one device ***works two hives,*** at ten rates the cost is only 25 cts. per hive. Be sure to send for circular, as this plan is almost too good to believe its being true.

For sale by A. I. Root, Medina, Ohio.
E. Kretchmer, Red Oak, Iowa.
W. T. Falconer Mfg. Co., Jamestown, N. Y.
Leahy Mfg. Co., Higginsville, Mo.

H. P. LANGDON, East Constable, N. Y.

10-14db Please mention this paper.

5-Banded Golden Red-Clover Bees.

If you want bees that will work on Red Clover, try one of our five-banded queens. Queens in July, untested, 75 cts.; ½ doz., $3.60; tested, $1.50; select, $2; the very best, $4. Descriptive circular free.

LEININGER BROS, Ft. Jennings, O.

Please mention this paper 5tfdb

TILE ✠ DRAINAGE.

BY W. I. CHAMBERLAIN, A. M., LL. D.,

Formerly Secretary of the Ohio State Board of Agriculture, and late President of the Iowa State Agricultural College. At present Associate Editor of the Ohio Farmer.

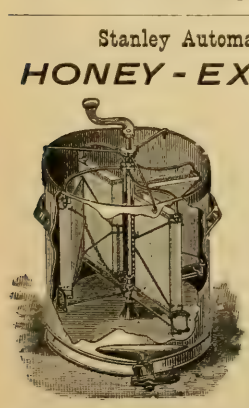
This is a valuable companion to our other rural books. It embraces the experience of forty years of one of our foremost practical agriculturists, who has laid with his own hands over 15 miles of tile.

Price 35c; by mail, 40c.

A. I. ROOT, MEDINA, OHIO.

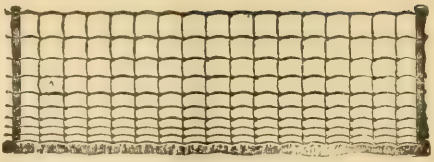
Stanley Automatic Reversing

HONEY-EXTRACTOR.



We still have in stock eight or nine 2 and 4 frame Stanley extractors, bought of Mr. Newcomb when we leased the right to make these machines. To work them off quickly, and give us a chance to put out machines of our own make, we offer these machines as long as they last, at one-third off old prices. We will sell the two-frame machines as they are for $8.00; the 4-frame for $12.00. They are crated ready for shipment, with crank direct on the center-shaft. We will attach our new bevel gear, as shown on page 14 of our catalogue, for $3.00 each extra.

A. I. ROOT, Medina, Ohio.



Three Posts to The Hundred Feet.

Height: Five feet, the standard.
Spaced: Close at the bottom where prowls the obtrusive pig. Wide at top where sweeps the unobstructed view.
Strength: To stop the mad career
Of running steeds
Though wild with fear.

Every foot of every panel, a perfect self-regulator. This is the ready-made fence built by the

PAGE WOVEN-WIRE FENCE CO., Adrian, Mich.

☞In responding to this advertisement mention GLEANINGS

UNTESTED QUEENS

Ready to mail at 50 cents each. Tested Italian queens, 75 cents each; 100 ready to mail on receipt of order. Reared from imported stock.

W. A. COMPTON, Lynnville, Tenn.

In responding to this advertisement mention GLEANINGS.

WIRE NETTING,

SHORT ROLLS, ETC.

We submit below, corrected from last issue, a list of the short rolls and remnants of wire netting that we have just received from the factory. We still have a good supply of 2-inch No. 19 netting 4 feet high, which we still offer at these special prices: 1 roll, $3.60; 5 rolls, $17.50; 10 rolls, $34.00. This you notice is 10c a roll higher than our last offer on this size. We have the 3-inch Nos. 19 and 20, 60 and 72 inches wide only, other widths all sold. We have put the price on the following pieces at the same rate as full rolls, except on the 72 inch, on which we offer an extra 10% discount.

Of 2-inch mesh No. 19 wire, we have the following remnants and short rolls at ⅜c per square foot. The figures at the left give the width in inches, and the other figures give the length of each piece in feet. Multiply this by the width in feet, then take two-thirds of the result to find the price of each piece.

12	117, 123.
24	69, 96, 97, 97, 114, 120, 128, 131, 143, 147
30	45, 50, 60, 62, 64, 70, 90, 91, 101, 107, 123, 137, 140, 144, 146.
36	9, 16, 18, 18, 19, 25, 26, 38, 40, 40, 40, 40, 49, 50, 50, 50, 53, 54, 55, 56, 58, 58, 64, 73, 73, 73, 74, 75, 82, 83, 84, 84, 87, 87, 90, 90, 92, 94, 96, 96, 96, 99, 100, 100, 100, 100, 100, 100, 100, 102, 102, 102, 105, 105, 109, 110, 111, 114, 115, 116, 118, 120, 120, 122, 124, 124, 125, 125, 128, 129, 129, 138, 142, 142, 143 143, 144, 144, 147, 147.
42	16, 20, 131
48	11, 20, 20, 25, 29, 32 35, 38, 40, 48, 55, 55, 60, 61, 64, 67, 68, 75, 75, 82, 83, 84, 86, 87, 90, 94, 96, 103, 119, 120, 122, 123, 123, 124, 130, 138, 138, 140, 143, 144, 144, 144 144, 145, 145, 145, 146.
54	72, 88 88, 143.
60	53, 71, 73, 73, 75, 78, 87, 96, 101, 101, 101, 105, 107, 110, 120, 123, 124, 138, 140 144 144, 146, 146.
72	16, 20, 42, 42, 42, 47, 48, 57, 71, 73, 75, 75, 81, 82, 85, 85, 88, 93, 100, 100 112, 119 120, 123, 124, 125, 134, 142.

Of 2-inch No. 20 we have the following pieces at three-fifths of a cent per square foot. Arrive at the price in precisely the same way as above, taking three fifths of the number of feet instead of two-thirds, to get the price in cents.

30	32, 39, 73, 105, 120 140 140, 140.
36	12, 20, 22, 36, 38, 39, 56, 57, 66, 68, 79, 81, 86, 88, 100, 100, 100, 110, 119, 120, 122, 126, 128, 128, 132, 134, 136, 138, 140, 141, 144, 145.
42	142, 143.
48	41, 55, 60, 66, 70, 85, 86, 92, 98, 105, 114, 123, 140, 143, 145.
54	145.
60	46, 48, 50, 51, 60, 73, 119, 139, 139.
72	25, 38, 44, 45, 70, 75, 76, 79, 100, 100, 128, 137, 139.

In lots of 5 pieces, any one or assorted kinds, deduct 5%; 10 pieces, 10%; 25 pieces or more, 15%. On the 72-inch netting you may also deduct 10% on single-piece orders; or, in addition to above, on quantity orders. First come, first served. Generally these pieces go off very rapidly, and it may be well to name a second or third choice in case your first may be gone.

A. I. ROOT, MEDINA, O.

SPECIAL NOTICES.

SHIPPING-CASES.

We are prepared to furnish promptly, and at best prices, choice clean basswood shipping-cases for comb honey. See p. 30 of our catalogue for description and price list.

SECTION CARTONS.

We have a good stock of cartons, for 4¼x1⅞ sections, that we can furnish promptly at the prices given in our advertising columns elsewhere; and notice we have them without tape handles at $1.00 per 1000 less than those prices. Special prices in large quantities.

JAPANESE BUCKWHEAT.

Now is just the time for sowing buckwheat, and we still have a plentiful supply of choice seed at the following prices: Peck, 40c; ½ bushel, 70; bushel, $1.20; 2 bushels, $2.20; 10 bushels, $10.00; bags included in each case. We have track of a further supply if it is needed. Sent on your orders.

STANLEY HONEY-EXTRACTOR.

Of the old stock of Stanley extractors we still have one two-frame, with gear, at $11.00; one four-frame with gear, $15.00, and three four-frame without gear, at $12.00. We can add a gear to any of the latter at $3.00 extra if necessary. We shall have no more cheap Stanley extractors when these are gone, so that, if you want to secure one, order quick. These prices are less than two-thirds of regular price.

SHIPPING-CASE GLASS.

We have an extra large supply of 2x9 shipping-case glass, 400 lights to a box. We sell this regularly at $2.50 per box; and if it had to be cut from whole stock it could not be furnished at this price. To reduce stock we will sell for $2.25 per box; 5 boxes, $11.00; 10 boxes, $20.00. We have also quite a little 2x18, which we offer at $2.40 per box of 200 lights, and the same reduction for larger quantity as on 2x9.

HONEY-CANS, PAILS, TUMBLERS.

Latest reports point to an old-time honey-flow in many localities, though rather late in opening. We are prepared to furnish promptly a full line of tin and glass packages for extracted honey. See pages 31 and 32 of our general catalogue for cut, description, and price. We call particular attention to our No. 25 jar, which holds a full pound of honey, has a glass cover with rubber ring, and a tin screw band to fasten the cover air-tight. We have these put up, 2 dozen in a partitioned case, all ready to be reshipped again without additional packing after the jars are filled. Price per case, $1.40; 6 cases for $8.00. The same jars, packed, 12 dozen in a barrel, at $7.00 per barrel.

LABEL AND RUBBER-STAMP CATALOGUE.

We have finally completed a new supply of job-printing and label catalogues which gives samples of different styles of honey-labels in several colors, and a list of prices. We are also putting in a 12-page supplement of rubber stamps, so that our label and rubber-stamp catalogues are now combined in one, and will be mailed free on request to all applicants. This gives prices also for printed envelopes, note-heads, shipping-tags, circulars, price lists, etc. The time for marketing honey is approaching, and you should be prepared with a suitable equipment for putting up your honey in the neatest way possible, so as to make it sell readily at good prices.

HONEY MARKET.

We have as yet secured no new honey, though we have had a number of offers The prospect is good for a large yield in many localities. We have had a number of cars of very choice white-sage extracted honey offered us, one or more of which we expect to take. We shall also have another car of Ball's choice alfalfa comb honey this year. It is early yet to name prices, as the market has hardly opened yet. We shall doubtless have some new honey to furnish within a week or two. We have about 1000 lbs. of very choice extracted honey, of last year's crop, that cost us 10c per lb., in kegs of 100 to 200 lbs. We offer it, till sold, at 9c in kegs, or 10c in 60-lb. cans. We will name prices on new honey later, when we are prepared to supply it.

AUGITE STOVE-MATS REDUCED AGAIN.

The stove-mat has proven so good a thing that there are many imitators, and prices are again reduced, owing to the competition between the various manufacturers. We consider none equal to the original "Augite," and we handle it in preference to any other. In the following reduced prices we have got down to "hard-pan," and we do not look for further reductions. Price 10c each; $1.00 per dozen; 6 dozen for $5.50, or 12 dozen for $10.50. By mail, 6c each extra on all sent singly, or 5 cents each on two or more in one package.

IMPORTED ITALIAN QUEENS.

Having just received a nice importation of queens direct from Italy, as noticed elsewhere, we are prepared to furnish the best imported, during this month, for $5.00; during the next three months, $4.00. Fair imported queens, $4.00 and $3.00 respectively. We have a good many orders booked for imported queens; and after they have rested a few days in the hives, and have laid enough eggs to show whether they are prolific or not, we will send them out. We were afraid that quarantine regulations on account of the cholera scare would be enforced at New York; but as they have not been, so far, we have been enabled, contrary to our own expectations, to get our imported queens through alive. We hope to be able to fill all orders through the coming season.

ONE-POUND SECTIONS.

The copious honey-flow, so suddenly sprung upon the bee-keepers in many sections, has found many unprepared with the necessary supplies, and the demand for section boxes has been very brisk for the past two weeks, many orders coming by wire. We are glad to say we were prepared to meet this sudden demand, and to fill all orders promptly. We still have a surplus of all the narrow widths, 1⅜, 1¾, 7-to-foot, 1⅛, and 1⅝ inch, No. 1 white, which we offer at $2.75 per M.; 2000, $5,00; 5000, $12.00; 10,000, $22.50. We have also a surplus of No. 1 cream, 1⅛, and 1⅞, which we sell at $2 00 per 1000; 5000, $9.00, to reduce stock. These are all 4¼ square. We shipped, early in the season, 50,000 of our No. 1 white sections, with some other goods, to Chas. T. Overton, Crawley, Sussex, England. On May 2d he wrote, with another order for 50,000, as follows: "I am well pleased with the goods you have sent. The sections are better than I expected."

LAWN-MOWERS.

The season for lawn-mowers is still ripe, though well advanced. We have a good supply of one of the most durable and satisfactory mowers made—the Globe. It is, if any thing, superior to the Philadelphia, which has for many years been the leading mower. It is made on the same plan, with decided improvements, and the price we ask at retail is below what the Philadelphia brings at wholesale. We have a good stock of the two most popular sizes —14-inch and 16-inch; we have also quite a few 10-inch. Beginning with July first we make the following special prices:

10-inch Globe	$3.60;	12-inch	$3.90
14-inch "	4.00;	16 "	4.50
10-inch Young America	2.50;	12 " Young Am.	3.00

This is a reduction of 50c each on the Young America mower, putting them away below cost. They are a single driver, and answer a good purpose for a small lawn, or for any one who can not afford a better one.

"BEES AND HONEY," AND "BIENEN KULTUR."

We have recently secured a large shipment of books from Thos. G. Newman, and among them one hundred copies each of cloth-bound "Bees and and Honey," at $1.00, and an abridged edition of the same in German, called "Bienen Kultur," paper covers, at 40c postpaid. We can furnish "Bees and Honey," by freight or express with other goods, at 90c, or, clubbed with GLEANINGS one year, postpaid, for $1.75; 10c less if the book goes with other goods

by express or freight. "Bienen Kultur," clubbed with GLEANINGS 1 year, for $1.25, or sent alone for 40c, postpaid.

EXPERT COLUMBIA ORDINARY BICYCLE FOR $30.00.

These are the days of safety bicycles, those having both wheels 24 to 30 inches in diameter, and the old-style high or ordinary wheels are not in great demand. There are some who still ride the old ordinary, especially if they can get a $150 wheel for $30.00. One of our helpers has a 54 inch Expert Columbia, which in its day was considered the best wheel of its class. It is in good repair, and will be furnished in first-class running order, securely crated, on board cars here, for $30.00—a rare bargain for any one in want of such a wheel.

THERMOMETERS, ORDINARY AND TESTED.

We have recently put in a new stock of thermometers of various sizes and styles. They are in demand at all seasons, but especially so at the present time. First the 10-inch tin-case thermometer, tested for incubator use; price 35c each; 3 for 90c; 1 dozen for $3.00. They are liable to be broken in the mails, as the bulb is so heavy. We will pack as safely as possible, and mail for 15c extra on one; 30c on three; and if they get broken we will send more at half price or stand half the loss. Ordinary tin-case thermometers, running from 20 to 50° below zero, to 200° to 250° above, good quality, and quite accurate, 7-inch, 15c each; 2 for 25c; $1.20 per dozen; or the 10-inch for 20c; 3 for 50c; 1 doz. for $1.50. By mail, 5 cents each extra for 7-inch, or 8c for 10 inch, on same conditions as above.

We have also 7-inch zinc dairy thermometers at 15c each; 3 for 40c; $1.30 per dozen; by mail, 4c each extra; and we have glass dairy thermometers, which are the nicest for dairy use. Price 25c each; 3 for 60c, or $2.00 per dozen; by mail, 5c each extra.

10 PER CENT REDUCTION ON WIRE NETTING.

You will find in our advertising columns a full-page advertisement of wire netting and fencing; also a special list of short rolls. For the next 60 days or while surplus stock lasts we will continue to sell the regular poultry size, 2-inch No. 19, 4 feet wide, in rolls 150 feet long, at the special 10 per cent discount from the regular price in full-page advertisement on all shipments made from here only. This special price is $3.60 per roll; 5 rolls, $17.50; 10 rolls, $34.00. As soon as surplus stock is reduced this special price will be withdrawn. We have on hand here ready for prompt shipment at regular prices wire netting of 3-inch mesh, No. 18 wire, 12 inches wide, up to 48 inch; also 2-inch No. 20, 12, 18, and 24 inches wide. Of 3-inch Nos. 19 and 20 we still have a few rolls 5 and 6 feet wide which we offer to close out as follows:

2 rolls,	3-inch	No. 20,	60	inches	wide,	$2.85	per roll.
2 "	"	"	72	"	"	3.25	" "
8 "	"	19	72	"	"	3.75	" "

This price is only two-thirds of what it would cost to replace it, and is a bargain for any one who can use such light netting.

Beginning July 1st we offer a special 10 per cent from the price of short rolls listed on another page, as long as stock lasts. This is in addition to the quantity discounts mentioned there and the special discount on 6-foot netting, making in all 10 per cent three times if 10 pieces of 6-foot netting are taken.

THE PLANT-TRADE BY JULY 1.

We have an excellent stock of cabbage-plants—Jersey Wakefield, Early Summer, Fottler's Brunswick, Excelsior Flat Dutch, Drumhead Savoy, and Large Red Drumhead. We can give you big plants or little plants; in fact, we can fill an order for any size you wish. Prices: 40 cts. per 100; $3.00 per 1000. If you will take some quite large strong plants we will sell them for $2.00 per 100, to clear off the ground. If the cabbages were to be put out near by, I would by all means recommend these large strong transplanted plants; and the only objection to shipping them a distance is the express charges on account of the much greater weight of large plants. I mention this, so that, if you should order large ones, you will remember that the express charges will be more. We can, however, if desired, trim off the large leaves so as to lighten them considerably.

We have also a splendid stock of Snowball cauliflower-plants, either large or small, at 75c per 100, or $6.00 per 1000. Our very finest cauliflower last season were put out in July and August.

We have plenty of tomato-plants, if anybody wants them; but I believe all experiments in the way of shipping tomato-plants in July have proved to be unsatisfactory; and putting out large tomato-plants—that is, where they are to be shipped a distance, does not seem to work as well as putting out large cabbage-plants. Here on our own grounds we move large plants without a bit of trouble; in fact, we consider the large plants preferable; but it does not seem to work as well when they are sent a distance.

STRAWBERRY-PLANTS.

We have now a few strawberry-plants sufficiently well-rooted to bear shipment; but there is such a pile of orders ahead of us that our supply would come nowhere near filling the demand. We hope, however, to be able to fill all orders for plants during the present month of July.

A PLAN TO GET LATE STRAWBERRIES.

You know I told you about picking off the blossoms so as to make the plants send out runners. Well, it probably had some effect toward making the plants send out stronger runners; but something else has come that I did not expect, and it pleases me very much. On two beds of the Parker Earl, where we picked off every blossom twice—in fact, getting almost a bushel of blossoms, they put in the *third* time to bear fruit; and now after the finest berries are all gone we have a lot of great beauties with which to surprise and astonish every one. The only thing about making this profitable is the labor of picking off the blossoms. I feel quite sure that strawberries can in this way be made a month later. I am quite inclined to think that the better prices would pay for the work of nipping off the buds.

SEEDS THAT MAY BE PLANTED IN THE FORE PART OF JULY, WITH A REASONABLE PROSPECT OF GETTING A CROP.

Of course, when I give you this enumeration I must mention such as I have found by experience to be safe for our latitude. In the first place, I will give you a list of the seeds that there can be but little question about producing something of value before frost. And perhaps I might mention first, vegetables that winter over safely, even though they do not give us a crop to use the first season.

Asparagus has never failed to winter with us, when sown in July. Winter onions will grow nicely from sets gathered now; and for several seasons we have had Yellow Danvers, Prizetaker, White Victoria, and American Pearl winter over from seed sown in July. The principal difficulty is the tendency to send up seed-stalks in the spring, as I have already mentioned. Parsnips may be sown now, and will winter over, of course, but the roots will be small. They are, however, finer for table use than where they get to be so very large. Rhubarb seed will also produce plants that will winter safely. The same with oyster-plants; but the roots are likely to be rather small unless the ground is very rich and you have an abundance of rain.

Now for seeds that produce a crop *before* frost: Henderson's bush lima bean; kidney wax bean; York State marrow bean; Eclipse beets; cabbage, where you put out plants; carrots; cauliflower (the finest we ever raised was from seed sown in July); all kinds of celery, if you have the plants; all of the extra-early sweet corns; cucumbers for pickles (in fact, July is usually considerad the very best month for pickles for factories); lettuce, wherever you have a demand for it in the fall; peas of all kinds where you have learned by experience that they will stand the heat of the hot months (we succeed almost every season in getting a fine crop of the American onder, if planted in July); peppers, where you have the plants; potatoes, if you have the Early Ohio seed that has been well kept thus late; early sugar pumpkin; radishes of all kinds, if you have a strain of seed that will not go up to seed; spinach, the same as radish; crookneck squash, if you have a demand for it; all kinds of tomatoes, provided you have good strong plants. I need not mention that July and August are the principal months for sowing almost all sorts of turnip seed. For further particulars, and prices, see our seed catalogue, sent free on application.

JUST SPLENDID.

Mr. H. Alley:—The queen I got of you last fall is just splendid. She is the best queen in an apiary of 150 stands. Would not take $10 for her.
Moravia, Cal. JOHN A. PEASE.

Price of such queens, $1 each.

HENRY ALLEY, Wenham, Mass.

What Stood the Test?

Hilton's Improved Chaff Hives have for the past 15 years. Send for his free illustrated catalogue of every thing needed in the apiary, of

Best Quality and Lowest Prices.

One hundred colonies of Bees for sale. Write for prices, and address
GEO. E. HILTON, Fremont, Mich.
8-13db Please mention this paper.

Golden Queens From Texas.

My bees can not be surpassed for business, beauty, and gentleness. Safe arrival and satisfaction guaranteed. Untested queens—March, April, and May—$1 each. **50** fine Tested Queens for early orders, $1.50 each. Order early. Send for price list. 5-16db.
J. D. GIVENS, Box 3, Libson, Tex.

VANDERVORT COMB-FOUNDATION MILLS.

Send for samples and reduced price list.
1tfd **JNO. VANDERVORT, Laceyville, Pa.**

For new price list of

PURE ITALIAN BEES AND QUEENS, AND WHITE AND BROWN FERRETS, ADDRESS
N. A. KNAPP,
ROCHESTER, LORAIN CO., O.
Please mention this paper. 4tfdb

Muth's Honey-Extractor.

Square Glass Honey-Jars,
Tin Buckets, Bee-hives.
Honey-Sections, &c., &c.
Perfection Cold-Blast Smokers.

APPLY TO
CHAS. F. MUTH & SON, Cincinnati, O.

Send 10-ct. stamp for "Practical Hints to Bee-keepers."
Please mention this paper.

TAKE NOTICE!

BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH,
14tfdb New London, Wis.

Did You Know

That my 44-page Catalogue is now ready? I have the largest stock of Bee-keepers' Supplies in New England, at prices away down. My brand of XX White Thin Foundation, 12 feet to the lb., is the finest in the market (so say my customers). Just send a postal for samples and prices, before you forget it. Address
7tfdb **WM. W. CARY, Colrain, Mass.**
In writing to advertisers please mention this paper.

Crossman's Got 'em

Those Beautiful Golden Queens.

Reared from the best five-banded stock. **Unexcelled** for **Business, Beauty,** and **Gentleness.** Satisfaction guaranteed. Warranted queens after June 1, 90c each; $9.00 per doz. Tested, $1.50 each. Select tested, $2 50. Safe arrival insured. Send for circular.
W. P. CROSSMAN,
Ballinger, Runnels Co., Texas.
5-16db Please mention this paper.

GRAY CARNIOLANS GOLDEN ITALIANS

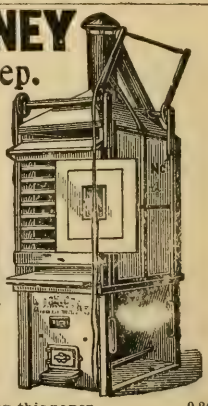
WE are headquarters in the United States for **Gray Carniolans.** A full description of this *wonderful* and *hardy* race of bees is given in our price list for 1893. Our **Golden Italians** are as good as the best. Each race is bred for business, in a separate apiary near no other bees. Get our prices before ordering, as we can save you money. Descriptive price list free.

F. A. Lockhart & Co., Lake George, New York.

The Golden Beauties.

My 5-banded Italian queens can not be surpassed for honey-gathering, gentleness, prolificness, and beauty. Untested, 75c each; tested, $1.00; breeding queens, $2.50 to $3.00. We warrant our queens purely mated. On orders for 5 or over, 10 per cent discount. Safe arrival and satisfaction guaranteed.
Address **C. B. Bankston, Chrisman, Tex.** 8tfdb

MAKE MONEY While You Sleep.



STAHL'S EXCELSIOR FRUIT DRIER

Evaporates Fruit **DAY and NIGHT.** Catalogue free upon application.
Address
WILLIAM STAHL EVAPORATOR COMP'Y, QUINCY, ILL.
Please mention this paper. 9-24db

Bee-Hives.

Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue 23-22db
W. H. PUTNAM, River Falls, Pi Co., Wis.

Deduct 3 Cts. per Pound

From our retail prices of foundation, given in our 1893 price list.

M. H. HUNT, - Bell Branch, - Mich.

READY AGAIN!

My location enables me to rear those nice Golden Queens, by Doolittle's method, as cheaply now as at any time in the North. Untested, 75c; 6 for $4.00; 12, $7.50. Last year's tested, $1.25; select, $1.75; breeder, $2.50. Safe arrival and satisfaction guaranteed.

J. B. CASE, Port Orange, Vol. Co., Fla. 5tfdb

5-Banded Golden Italians.

Three or five banded queens, each, 75c; 6 for $4.25. Nuclei and full colonies cheap. Catalogue free.

9-tfdb *Chas. H. Thies, Steeleville, Ill.*

Root's Goods AT ROOT'S PRICES can be had at Des Moines, Iowa. Address Jos. Nysewander.

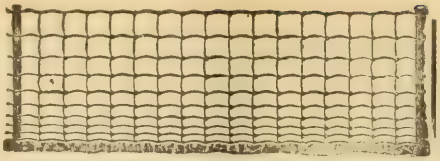
Choice Seed of the

Japanese Buckwheat.

It does not pay to devote valuable land to the production of any plant simply for the honey it may produce. In providing forage for the bees, other than what they naturally find, choice should be made of those plants that produce honey and yet are a paying crop aside from the honey. One of these plants which generally produces honey, and at a time when other bee-pasturage is usually scarce, is buckwheat. The best variety of this that we are acquainted with is the Japanese, which has been before the public for five or six years. With favorable conditions and good soil this will easily produce 50 bushels per acre, and it matures within a few weeks from the time it is sown. It rarely brings less than 50c a bushel for flouring, and often a much higher price. The price the past year has ranged much higher than usual, being from 70c to $1.00 a bushel.

The time for seeding is at hand, and we are provided with a good stock of choice seed which we offer, while it lasts, at the following prices: 1-lb. 5c; 1 peck, 40c; ½ bush., 70c; 1 bush., $1.20; 2 bush., $2.20; 10 bush., $10.00; bags included. By mail, 8c per pound extra for postage.

A. I. ROOT, MEDINA, OHIO.



All Men Equal before the law and "the Page."

A millionaire writes—"Perfect in every particular." An extensive breeder—"We shall build no other." A laboring man—"It keeps out my neighbors' hens." A lady—"Circulars do not do it justice." A ranchman—"The cheapest reliable hog fence." A railroad President—"The best fence we have ever used."

PAGE WOVEN-WIRE FENCE CO., Adrian, Mich.

☞In responding to this advertisement mention GLEANINGS.

IF YOU WANT BEES

that will just "roll" in the honey, try Moore's strain of Italians, the result of 14 years' careful breeding.

Wm. Stevenson, Pasadena, Cal., says: "I have tried queens from several of the best queen-raisers, but have found none that equal your strain."

Reduced prices: Warranted queens, 80c each: 3 for $2.00. Strong 3-frame nucleus, with warranted queen, $2.50. Safe arrival and satisfaction guaranteed. Those who have never dealt with me, I refer to A. I. Root, who has purchased of me over 600 queens. Circular free.

J. P. MOORE,
11-12d *Morgan, Pendleton Co., Ky.*

☞In responding to this advertisement mention GLEANINGS.

TELL you what, Jones, **Levering Bros.** sell the best goods and at the lowest price of any one I've struck yet. The largest and best equipped

Bee-Hive Factory

in the West. The Dovetailed Hive and New Hoffman self-spacing frame a specialty. Every thing used by practical bee-keepers at wholesale and retail. Send for their free Illustrated Price List, and save money. Supply Dealers, send for their Wholesale List. Address

LEVERING BROS.,
3-14db **Wiota, Cass Co., Iowa.**
Please mention this paper.

BEE-HIVES AND SUPPLIES.

Send for catalogue free. Address **SAMUEL JONES,** Highland Park College, Des Moines, Iowa. 1-19db

Eastern Supply House.

We furnish everything used in the apiary, and at bottom prices. Illustrated circular free.

I. J. STRINGHAM, 105 Park Place, N. Y.

21-20db Please mention this paper.

Cash for Beeswax!

Will pay 21c per lb. cash, or 24c in trade for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 28c per lb., or 30c for *best selected wax*.

Unless you put your name *on the box*, and notify us by mail of amount sent, I can not hold myself responsible for mistakes. It will not pay as a general thing to send wax by *express*.

A. I. ROOT, Medina, Ohio.

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CONVENTION NOTICE.

The Northern Illinois Bee-keepers' Association will meet at the residence of O. J. Cummings, two miles northeast of Rockford, Ill., Aug. 15, 1893. B. KENNEDY, Sec., New Milford, Ill.

If you wish to

Smile,

Try my fine Italian queens. Either 3 or 5 banded, bred in different yards, 75 cts. each; $4.25 for 6, or $8.00 per doz. Prices to dealers, and by the quantity, on application. Fine breeders, $5.00; always on hand. Prices for those that produce strictly 5-banded bees, on application. Remember, I guarantee safe arrival, and satisfaction in the bounds of reason.

MRS. JENNIE ATCHLEY,
Greenville, Hunt Co., Tex.

Mrs. Jennie Atchley,
Greenville, Tex.

My Dear Madam:—The nuclei reached me in splendid order, and the queen is a very fine one. You would have been delighted to hear the exclamations of delight, as the children and Mrs. L gathered around to see the "queen Mrs. Atchley sent." I thank you for your promptness, and for sending me such a fine queen. Very truly yours,
Aurora, Tex., July 3, 1893. L. P. LOWRY.

Eggs and Plants. Several varieties. Best quality. Any quantity. Finely illustrated catalogue free. Address
GEER BROS., St. Marys, Mo., or H. B. GEER, Nashville, Tenn.

Root's Goods for the West.
Address Jos. Nysewander, Des Moines, Ia.

Black and Hybrid Queens For Sale.

For the benefit of friends who have black or hybrid queens which they wish to dispose of, we will insert notices free of charge, as below. We do this because there is hardly value enough in these queens to pay for buying them up and keeping them in stock; and yet it is oftentimes quite an accommodation to those who can not afford higher-priced ones.

We have a few mismated Italian queens on hand which we will sell as long as they last, for 40c each.
A. I. ROOT, Medina, Ohio.

1893 mismated and hybrid Italian queens; yes, some 10 or 15, most of which were reared present season; 30c each, or 4 for $1.00, postage and cage included. W. A. CAMPBELL, Doogan, Ga.

I have 4 hybrid queens ready to send by return mail, and 1 black queen, at 25c each, or the 5 for $1. Please send postal note. CALVIN C. PHELPS,
East Windsor Hill, Hartford Co., Ct.

A few leather-colored and bright hybrid queens for sale at 25c each; only a few. Speak quick.
CHAS. H. THIES, Steeleville, Ill.

Nice mismated Italian queens, 30c each.
T. H. KLOER, 426 Willow St., Terre Haute, Ind.

SAY!

Did you know *TESTED* that Green sold *QUEENS* OF HIS CHOICE STRAIN OF YELLOW HUSTLERS

For Only $1.00?

It's so. Before July 1st, $1.50. Mismated queens, 35c. Have your orders booked now. Full colonies and nuclei at low prices. 12tfdb

J. A. Green, Ottawa, Illinois.

Please mention this paper. 12-13-14db

TESTED QUEENS 80 CTS. I requeen my whole yard every year, and now again offer about 50 fine Italian tested queens at 80c each, or two for $1.50. Mismated queens at 30c each. My queens are equal to the best. By return mail. *T. H. KLOER,*
14-tfbd 426 Willow St., Terre Haute, Ind.

Wants or Exchange Department.

Notices will be inserted under this head at one-half our usual rates. All advertisements intended for this department must not exceed five lines, and you must SAY you want your adv't in this department, or we will not be responsible for errors. You can have the notice as many lines as you please, but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices offering articles for sale, can not be inserted under this head. For such our regular rates of 20 cts. a line will be charged, and they will be put with the regular advertisements. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange 4¼x4¼ sections for queens, and bees, by the pound, in nuclei or full swarms. J. C. SAYLES, Hartford, Wis.

FOR exchange.—A lot 30x100 feet for Barnes foot power saw and f'd'n mill. L. L. ESENHOWER.
112 South 3d St., Reading, Berks Co., Pa.

WANTED.—To exchange 40 ten-frame 2-story Langstroth hives, used but a short time, for Italian, hybrid, and black bees.
G. L. UNTERKIRCHER, Manchester, Mich.

WANTED.—To exchange one honey-extractor, new, never been used, reversible 4-frame, any size; will exchange for comb honey or offers, cheap. Address JOHN T. HASTINGS, Box 407, Dayton, Ohio.

WANTED.—To sell or exchange, for good Florida, Arizona, or Southern California property, situated in good honey locality, an established wall-paper, paint, picture-framing and artists'-material business, in a thriving city of 10,000. Also a printing-office with weekly newspaper and job-work trade established. Correspondence solicited. Satisfactory reasons for wishing to sell. Address
CORELL & HILL, Titusville, Pa.

WANTED.—To exchange extra good set double driving harness, hand made, for safety bicycle.
A. BLUE, Harnessmaker, Bladensburg, O.

WANTED.—Winchester shotgun or offers, for a trio of English Beagle hounds three months old, two females and a male. The best rabbit hounds on earth. D. S. HALL, So. Cabot, Vt.

WANTED.—To exchange bees in 8-frame hives for typewriter, bicycle, Barnes saw, or any thing useful. W. R. TATE, Bowling Green, Miss.

WANTED.—To exchange yellow Italian queens, also some of the late varieties of strawberry-plants, for bees or offers. MRS. OLIVER COLE,
Sherburne, Chenango Co., N. Y.
14-tfdb Chenango Valley Apiary.

WANTED.—What have you to exchange for pointer puppies? E. B. REDFIELD, Harlan, Ia.

HONEY COLUMN.

CITY MARKETS.

DETROIT.—*Honey.*—Some new honey is being offered, and is selling slowly at 14@15. Extracted, 7½@8. Beeswax, dull at 23@24. M. H. HUNT,
July 10. Bell Branch, Mich.

CLEVELAND.—*Honey.*—Demand for honey seems to be on the increase, and No. 1 white 1-lb. sections will bring 17c; extracted, 10. Beeswax, 30.
WILLIAMS BROS.,
July 8. 80 & 82 Broadway, Cleveland, O.

CINCINNATI.—*Honey.*—There is a fair demand for extracted honey. Arrivals are fair at 5@8c, according to quality. There is no choice comb honey in our market. What we have brings 12@14c in a jobbing way. Demand for beeswax is slow. Arrivals fair at 20@23c for good to choice yellow.
CHAS. F. MUTH & SON,
July 10. Cincinnati, O.

NEW YORK.—*Honey.*—No comb on the market; new crop of extracted is arriving freely from California and the South, and the market is well stocked. Trade is quick, demand limited, and prices have a downward tendency. We quote: Southern, common to fair, 60@65c per gallon; choice, 70@75c; California, 6@6½ per lb. Beeswax, 25½@27c.
HILDRETH BROS. & SEGELKEN,
July 11. 28 West Broadway, N. Y.

CHICAGO.—*Honey.*—There is not any active market in honey, as the new crop is only beginning to arrive. We have sold some of the best lots of comb honey, 1-lb. sections, at 17c. There are some old dark lots on the market that it is impossible to get offers on at present. The extracted is also quiet, as dealers are holding off to see what is going to be the result of the crop. Extracted is ruling at 6@7. Beeswax, 23@25. R. A. BURNETT & CO.,
July 8. 161 So. Water St., Chicago, Ill.

ST. LOUIS.—*Honey.*—Comb dull, with fair stocks. We quote: White clover, 16@17c; medium, 12@15; dark, 8@10. Extracted and strained, quiet. Light-colored, in barrels, 6½; medium, 5@5¾; dark, 4½@5; cans, half-cent advance. Prime beeswax, 24c.
D. G. TUTT GROCER CO.,
July 10. St. Louis, Mo.

FOR SALE.—White-clover and linn honey, extracted, by the can or barrel. Honey is A No. 1.
J. B. MURRAY, Ada, Ohio.

HONEY! HONEY!

Comb and extracted wanted. White-clover preferred. Please send samples, giving prices.
J. A. BUCHANAN & SONS, Holliday's Cove, W. Va.

BUFFALO, N. Y. Unsurpassed Honey Market.
BATTERSON & CO. Responsible, Reliable,
Commission Merchants. 18tfdb **and Prompt.**

Canadians, Look Here!

On and after July 15th I will sell two-frame nuclei, both frames of brood crowded with bees, with five-banded golden Italian queen, for $2.00 each; also 150 five banded untested queens, 75c each, and a few exceedingly choice breeders, warranted to produce seven-eighths five-banded bees, $3.00 each. Send in orders early.

Hives, Sections, Smokers,

And all Goods needed in the Apiary at rock-bottom Prices. Send for price list. References given.

C. A. OUELLETTE,
Tilbury Center, Ont., Can.

Friends,

I am now ready with those nice Italian queens, which I will sell at $1.00 for untested; tested, $1.50. Bees by the lb., $1.00; 1-frame nucleus, $1.25; 2-frame, $2.25.
Mrs. A. A. Simpson, Swarts, Pa.

Now Ready.

Untested Italian queens, 75 cts. each. The golden or leather-colored kind. Also bee keepers' supplies. Send for circular.
JOHN NEBEL & SON,
High Hill, Mo.

PATENT WIRED COMB FOUNDATION

Has No Sag in Brood-frames.

Thin Flat-Bottom Foundation

Has no Fishbone in the Surplus Honey.

Being the cleanest, it is usually worked the quickest of any foundation made.

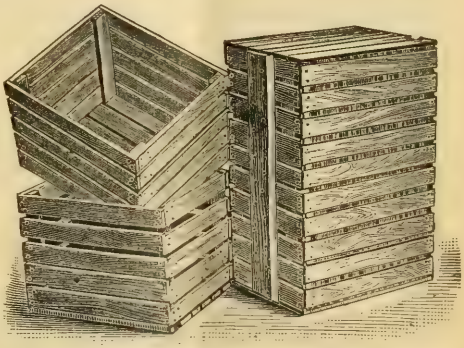
J. VAN DEUSEN & SONS,
Sole Manufacturers,
Sprout Brook, Montgomery Co., N. Y.

UNTESTED ITALIAN QUEENS,

Bred from best imported stock, 60 cts. each; 6 for $3.00. Safe arrival guaranteed. **H. G. QUIRIN,**
14-tfbd **Bellevue, Huron Co., Ohio.**

$6.00 will buy one good "EDLAND" typewriter, 78 characters, almost new; cost $11.00.
J. N. PATTERSON, England, Pa.

BUSHEL BOXES.



The above cut shows our new-style *all-slatted bushel box.* We have two other styles; one has slatted bottom and sides with solid ends in three pieces called the *slatted bushel box.* The other has solid ends and close bottom and sides, and is bound with galvanized iron and called the *galvanized bound box.* These boxes were devised by T. B. Terry for handling potatoes, for which purpose nothing could be handier. The potatoes are picked up into the boxes in the field and left in them till sold. Other crops, such as cucumbers, tomatoes, and apples are being handled in these same boxes. They are of such a size that two go crosswise in an ordinary wagon-box. Outside measure is 14¼x16⅞x12½ deep, and they hold a bushel of potatoes level full so they can be piled one upon another. The above cut shows two *all-slatted* boxes nailed up, and a bundle of 15 alongside; 13 of the 15 are in the flat, packed inside the other two, and nails of the proper kinds are included. The *slatted* and *galvanized bound* boxes are put up in the same way, except there are only 12 in a package instead of 15. Each package weighs about 85 to 90 lbs.

PRICE LIST.

All-slatted bushel box, per crate of 15..... ...$1 50
Slatted bushel box, per crate of 12..... ..1 50
Galvanized bound bushel box, per crate of 12....2 10

In lots of ten crates, 5 per cent discount will be deducted. Price each, nailed, 15, 18, and 22 cents, respectively. A 20-page pamphlet called Handling Farm Produce, telling all about these boxes, mailed free on application.

A. I. ROOT, Medina, O.

Feeding Back

Honey to secure the completion of unfinished sections can be made very profitable if rightly managed during the hot weather of July and August. In "ADVANCED BEE CULTURE" may be found complete instructions regarding the selection and preparation of colonies, preparation of the feed, manipulation necessary to secure the rapid capping of the combs, time for removing the honey, and how to manage if a few sections in a case are not quite complete; in short, all of the "kinks" that have been learned from years of experience and the "feeding back" of tons of honey.

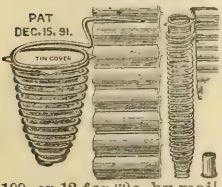
Price of the book, 50 cts.; the REVIEW one year, and the book, for $1.25; or the REVIEW from July (when the Experiment-Apiary Reports began), to the end of the year, and the book, for only 75 c. Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Mich.

PORTER BEE ESCAPES

are used and pronounced a great labor-saving implement by **Chas. Dadant & Son, Prof. A. J. Cook, Chas. F. Muth, Jno. S. Reese, J. H. Martin, John Andrews, F. A. Gemmell, Wm. McEvoy, A. F. Brown, Thomas Pierce,** and many other prominent bee-keepers. Descriptive circular and testimonials mailed free. PRICES: Each, post-paid, with directions, 20c.; per doz., $2.25. *Return them and get your money back after trial if not satisfied.* For sale by dealers. Address **R. & E. C. PORTER LEWISTOWN, ILL.**

CONTROL YOUR SWARMS.



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Italians. Bred for business, beauty, and gentleness. Tested queen, $1.25. Untested, 75c. 1 lb. bees in shipping-cage, 75c.

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Mulberry Grove, Bond Co., Ill.

PASTEBOARD BOXES, OR CARTONS.

FIG. 118.

Bee-keepers are realizing more and more the value of these cartons for putting their comb honey in marketable shape. Other articles of home consumption are put up in a neat attractive way, and in shape to be handed to the customer and carried safely without wrapping. Why not sections of comb honey, especially when the cost of the boxes is so low? Cartons in stock are for 1⅞ and 1⅛ sections.

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Name or designation. Price—	100	500	1000
1-lb. carton, plain 1c each; 25 for 20c..	$ 60	$2 75	$5 00
1-lb. carton, printed one side, one color, name and address	90	3 50	6 00
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QUEENS.

Queens, either 3 or 5 banded, 75 cts. each; ½ dozen, $4.25; 1 dozen, $8.00. Breeding queens, $2.00. Circular free.

J. F. MICHAEL, German, Darke Co., O.

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GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
PUBLISHED BY A. I. ROOT
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STRAY STRAWS

FROM DR. C. C. MILLER.

"THE GREAT CLOVER year" will be the way 1893 will be referred to in the future.

"ANSWERS TO QUESTIONS," p. 525, is a fine article, notwithstanding the frequent change of subject.

IT'S LIKE OLD TIMES to be able to have honey standing around almost anywhere without starting robbing.

HOW MANY BEES are in a pound? Root, I think, puts it at 5000, and Simmins says 3500. How many are there?

TRY MELILOT, at least a little bit of it, for hay. My horse will not eat the green stuff this time of year, but will the dry.

IN INTRODUCING queens by means of hatching brood, you can keep them closed for five days. If I am not mistaken the young bees will not fly out sooner.

CLIPPED QUEENS for me, if there were no other reason than to have them marked. Then I'll not think a queen is three or more years old when she was superseded last summer.

TEACHERS AND PREACHERS seem largely represented in the ranks of bee-keepers in Germany. Does this speak well for the vocation, or for the teachers and preachers? Perhaps both.

EGGS DON'T HATCH from heat alone, according to Simmins. He says, "No eggs will hatch until the workers first surround them with the preparatory food upon which the tiny grub is to feed."

CLIP ONE WING on one side is frequently advised for queens. I've been so many times fooled into thinking that such queens were not clipped at all, that I always want both wings on one side clipped.

"THERE'S NOTHING NEW under the sun." The Wells system, two colonies working together in one super, which has made a stir in England, Herr Reepen says is old in Germany, and for many reasons cast aside.

FRIEND WILKIN says he's often seen laying queens fight to a finish. Perhaps the way of it is, that laying queens don't always fight, but virgin queens always do. Do the tempers of the gentler sex always improve with age?

WHY IS IT that queens are so often found dead in their cells? They may be found in all stages, from the shapeless grub to the fully colored insect. Workers don't die that way in cells; why should queens?

ASBESTOS keeps a smoker from getting so hot, but I questioned whether the advantage in that respect would not be overbalanced by the greater weight. After a full trial, I find it so much comfort that I vote for asbestos.

ARE DRONES of unfecundated queens virile? Herr Reepen cites a case reported by Lehrer Strack, in which a young queen was fecundated by drones from a drone-laying queen before other drones were present in the neighborhood.

WHO WAS THAT, friend Dayton, that pulled on a hive-cover with both hands so hard that it flew away? (See p. 519.) Tell him to wiggle a screwdriver under one corner, and, if necessary, under the other, and there'll be no snap about it.

CLIPPING QUEENS' WINGS is better done, as friend Dayton says, before the brood-nest gets beyond two or three combs; and where queens are raised in nuclei, or where it is otherwise convenient, it is a good plan not to wait till spring, but to clip them just as soon as they begin to lay.

THE STING-TROWEL THEORY, according to Thos. Johnson, in *A. B. J.*, was evolved by Mr. Clarke after seeing a lot of beavers at their work "putting on the last finishing touches with their tails." Knowing that bees had tails, it was easy to reason that they were used in the same way.

A STANDARD SIZE of section may be adopted, and it would be a good thing; but you can't have a standard weight of section, for the simple reason that bees will not always build them of the same weight, nor any thing like it; at least, the bees in Northern Illinois have passed a resolution to that effect.

DO BEES sometimes hold over eggs, without allowing them to hatch, three days after being laid? I have had some cases that looked very much like it, unsealed queen-cells being found in a full colony at a longer period after the removal of the queen than ordinary rules would allow. But some mistake may have been made.

A SMALL SWARM was hanging on a tree by the roadside as I went to an out-apiary June 24. I hived it in my hat and took it along, but left a cluster about the size of an egg. I found no queen in the little cluster, but it was still there as I passed July 3, but was gone in the evening, having hung there queenless nine days.

WORKING PEOPLE, according to the World's Fair authorities, were just pining for a chance to get into the fair on Sunday. Now that the Sunday gate-money has dropped to half of the average week day, wonder what excuse they will have for a continued violation of their con-

tract. It's a great fair, but there's nothing fair about the authorities.

THAT GLEANER in all fields, Herr Reepen, in *Centralblatt*, refers to A. I. Root's warning against adulterated wax in foundation on account of breaking down in hot weather, and then says that, unfortunately, they understand adulteration better in Europe, as, to their great sorrow, adulterated foundation does not break down. There!

WHEN I SAID that no after-treatment would change the sex of an egg, I think I had in mind the food and construction of cell. At the same time, if I had expressed myself with regard to it I should have said that such change as that mentioned by friend Schuddemagen, on p. 216, was impossible. If the observation of others agrees with his, I shall have to own up that that was another of the things I didn't know.

QUEENS LAYING IN QUEEN-CELLS.

DOOLITTLE FURNISHES PROOF THAT QUEENS DO SOMETIMES LAY IN QUEEN-CELLS.

All of the older readers of GLEANINGS will recollect that there has been, in the past, much discussion regarding whether the queen ever lays the eggs directly in the embryo queen-cells, found in the hive during times of natural swarming, and when the bees supersede their queens. Years ago nearly every one claimed that, as the queen had such an antipathy toward rival queens, it would be impossible for her to lay the eggs in the cells prepared for her rival in the hive, and claimed that the workers carried the eggs found in these cells and deposited them there, keeping the queen from removing or destroying these eggs, and the larva which might hatch from them, by clustering about the cells. Right here I wish to say that, in all of my experience for the past twenty-five years, I have never known of a single egg being conveyed from one cell to another; but in scores of cases have I known larvæ to be transferred by the bees to different combs and queen-cells. On this one point I have been more particular than on most others—so much so, that, of late, I have wondered whether those who told about bees removing eggs did not really mean larvæ. I call to mind one particular case in the past, where larvæ were removed by the hundred, as it were, but only two eggs were found in queen-cells, although the bees had a laying queen. The circumstances were these: A swarm came out one day when I was away from home; and as the queen had her wings clipped they returned. Not desiring them to swarm, the hive was opened in the afternoon, and all cells cut off. The next day this same colony swarmed again; and before I had a chance to find the queen, she having run under the bottom-board of the hive, the bees commenced to return; and while they were doing so another swarm came out, and, without stopping to circle, as they usually do in the air, went directly in with the returning swarm. Before things became settled, a second and third swarm came out from other hives, and went in with those already returning, so that I had four prime swarms in and on that one hive the queen in the mean time crawling out from under the bottom-board and going in with them. As the three queens belonging to the other hives had their wings clipped, they could not go with the bees, but were returned to their respective hives, and the bees allowed to remain to see what would become of the matter. The next day the four swarms came out as one, and were hived in a specially prepared hive, from which I secured about 100 lbs. of comb honey in about two weeks. An examination of the old hive showed hundreds of queen-cells started all over the combs; and, as I now remember it, 178 of these cells had little larvæ in them, swimming in royal jelly, while only two had eggs in them. As many of these cells were built on the sides of the frames it would be impossible for larvæ to have gotten into them (or the cells built over larvæ), other than by the bees carrying them there. But, to return:

After a little such men as Gallup, Grimm, and others, came to believe that the queen *deposited* the eggs for all queens in the queen-cells, where the colony was in a normal condition; and, if my memory serves me rightly, Mr. Grimm saw a queen laying in a queen-cell, while Mr. Gallup believed they did so by the position of the egg in the cell. Later on a hired man whom I had saw a queen lay in a queen-cell while I held the frame which they were on, in my hand, as I gave years ago to the public; and many others now admit that the queen lays the eggs found in the queen-cells in times of natural swarming, although I see that "Langstroth on the Honey-bee," as revised by Dadant, has these words in it: "We will hazard the conjecture, that, in a crowded state of the hive, the queen deposits her eggs in cells on the edges of the combs, some of which are afterward changed by the workers into royal cells. Such is a queen's instinctive hatred of her own kind, that it seems improbable she should be intrusted with even the initiatory steps for securing a race of successors."

I read this statement with surprise, after all the light we had been having thrown on the subject. None of the eggs laid in the queen-cells, produced during natural swarming, can possibly produce rivals to the old queen, for she has either departed from the hive before the young queens hatch, or the cells are torn down by the workers on account of a scarcity of honey, or unpropitious weather, whereby swarming is postponed indefinitely. But there is a letter lying near me, that has just come to hand, which gives a case of a queen laying in a queen-cell, which is more perfect in all its details than any thing we have had before, and which I think should go on record for the benefit of those who are to come after us. After writing of the strength of his bees, and how a part of them are in hives having glass in the back, the writer, J. E. Ginn, of Ellsworth, Me., speaks as follows:

"I have just seen (June 22) the queen lay an egg in a queen-cell, the same being not more than ten minutes ago. I thought I would write you at once, so I could give all the details correctly. There is a one-inch space between the frames and the glass, and the bees built a piece of drone comb in this space, the same having drone brood in it. Looking in to-day I saw a queen-cell half built on the edge of this in plain view. The queen was one inch from this cell, and one of the bees was feeding her. After a moment she passed in between the frames for a second or so, when she came back and went directly to the queen-cell, put her head up into the cell, then, curving her abdomen, she inserted it well up in the cell and deposited the egg. After laying the egg she again examined the cell, remaining in it with her head, perhaps ten seconds. I have written at some length, for the queen seemed to be so particular. I have seen queens laying in worker comb many times; and while they would examine the cells before laying in them, yet I never saw one look into a cell after she had laid an egg in it, as did this queen the queen-cell she had laid in."

You will notice that our correspondent says the queen inserted her abdomen "well *up* in

the cell" (italics mine), so it would seem that a queen lays in a queen-cell just the same as in other cells. The position the queen must assume in laying in queen-cells was one of the strong points brought to bear on this matter by the doubting ones. It would seem to me that there should be no longer any doubt in the matter of queens depositing eggs in queen-cells.

Borodino, N. Y., July 5. G. M. DOOLITTLE.

BARRELS FOR EXTRACTED HONEY.

PLAIN DIRECTIONS ON WHAT BARRELS TO USE, HOW TO CLEANSE, HOW TO PREVENT LEAKAGES, ETC.

[The following, and especially the directions from Chas. Dadant & Son, is so valuable and seasonable that we are glad to place it before our readers. We have not produced extracted honey in any quantity for years; but as the Dadants have had such a large experience, we have no doubt that their advice not to wax is correct.]

Please give me some advice in regard to the use of barrels for storage of extracted honey. I can not obtain *new* barrels, but have the usual choice of empty ones from grocery or liquor stores. I greatly injured the flavor of a quantity of nice clover honey last season by storing in wine-casks, though the same had been carefully waxed in accordance with instructions in the "A B C of Bee Culture." I am inclined to favor high-wine or syrup casks, thoroughly sealed and waxed, but should like advice from some one having experience.

Hull, Quebec. SUBSCRIBER.

Chas. Dadant & Son, of Hamilton, Ill., answer the above as follows:

We have always used second hand barrels for extracted honey. Those that we prefer are barrels that have contained pure alcohol. Such barrels are not charred inside, but are gummed instead with a preparation of glue which honey does not dissolve, and they do not leak, unless they have been exposed to the weather, or filled with water.

We have also used, without unpleasant effects, whisky-barrels, but these are often charred on the inside, and this must be ascertained before they are used, as it is of great importance. The little pieces of charcoal which become loosened from the walls of the barrel mix with the honey, and are very difficult to remove, as they float about in the honey, after having become soaked with it. Charred barrels should be discarded.

We would not advise the use of any other barrels, unless they are new. We will say, however, that a barrel that has contained wine, molasses, or syrup, may be used if it has been thoroughly cleansed.

To cleanse a barrel thoroughly, it is best to remove one head, and some care must be exercised in order to replace it in the same position, or the barrel might leak. Follow these precautions:

First mark the head and the chime, or end of staves, with a chisel or some sharp instrument, so that you may find the exact position occupied by the head, when putting it back. Mark two places so as to make sure. Then take a large gimlet and screw it into the middle of the head for a handle, taking care not to pierce the head through. Then remove all the hoops except the top one. They may also be marked, if necessary, so as to be returned to the same position. When all are removed but one, have some one hold the head by help of the gimlet until the last hoop is off. When the barrel has been cleaned, put the head back in the same position.

We would not advise any one to use barrels with any sour or smutty smell; but such barrels, in a case of necessity, may be cleaned by washing them, after removing the head, with a pint of oil of vitriol mixed with about two gallons of water, or with a little caustic lime diluted in water. But after cleaning a barrel in this way, it should be again washed with water, and scalded if need be. A few days of exposure to the air will help.

Old barrels, the wood of which has become soaked with water, are very objectionable—the more so as they will dry when filled with honey, and in drying will shrink to such an extent as to be unable to hold their contents. The right kind of barrels to use should not leak when very dry, and that is why we prefer the alcohol-barrels to any others, as the very dryest timber is used in their manufacture.

We used to wax barrels years ago, but abandoned the practice, as we found it rather expensive and inefficient.

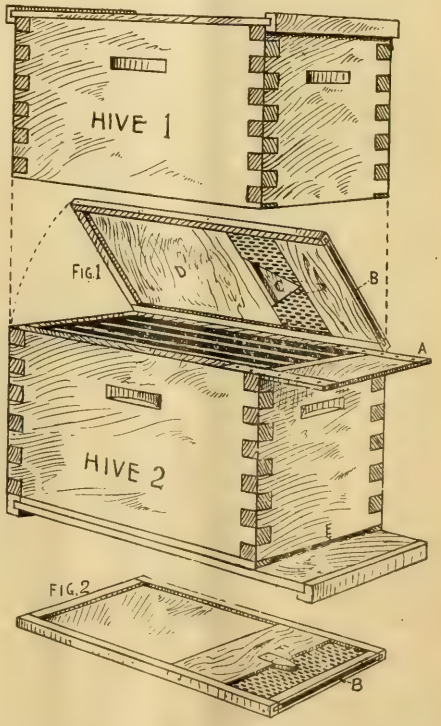
After emptying honey-barrels, we place them in a dry shed. We do not wash them until ready to fill them again, and then use only a small quantity of hot water. We use iron-bound barrels exclusively, as the hoops may be tightened much more efficiently than wooden hoops. We have never experienced any difficulty in procuring all the barrels we needed, at from $1.00 to $1.50 each, even in the season of 1889, when we harvested some 75 barrels of nice clover honey. CHAS. DADANT & SON.

American Bee Journal.

SELF-HIVERS.

HOLTERMANN'S IMPROVEMENT AND SYSTEM OF MANAGEMENT.

Ever since the convention of the North American bee keepers at Washington, and the explanations of E. R. Root, and his illustration by sample of a self-hiver, I have felt that the day would undoubtedly come when this appliance would be very largely used. Having carefully read almost every thing that has been said upon the subject in our leading bee-journals, I now believe that the self-hiver has many strong friends, and some who look upon its success in the future with doubt. The accompanying self-hiver, I think, is something better than



has yet been got out. 1. The ventilation of the hive by means of it is more easily secured; 2. The bees have a less distance to travel; 3. Although I do not think that, after the first few times, bees are much inconvenienced by passing through perforated metal, yet it is no

advantage to them; and by this design they require to pass only once through the metal. The queen, passing the two metals by means of the channel, finds herself at either one side or the other. This portion of the design is the idea of W. M. Bayless. His proposition was to do this by means of a bee-escape. I proposed a simpler device, and the leading of the queen to the outlet, which his did not possess.

Next, I like an alighting-board, and the accompanying one is a simple device. It can in a moment be attached to any hive. The tin clips are slipped between the self-hiver and the wall of the hive. The slight bevel to the front board gives the alighting-board a slight pitch.

The objection raised as to the necessity of lifting hives to see whether the bees have swarmed can be overcome readily, and I have arranged the following device: The new hive has at the front of it, and about half way down, an auger-hole which is covered with a large button. In passing from hive to hive to examine for swarms, all that is necessary is to open and close the buttons. If the bees are down, examine for swarms; if not, pass on and save your back. I have as yet had no swarms, as increase is kept down and supers are on most of the hives; but several self-hivers are in place, and some have already reported success in hiving bees with the Pratt self-hiver. The Ontario Apicultural and Experiment Union are testing the Pratt self-hiver. I thought it best to say this first, as it had to a certain extent already been tested. The idea was, to test the principle of self-hiving—not special designs. Self-hivers must mean a great deal for the agricultural classes; hence the selection of the experiment. The Langdon device may be good. It has some things entirely original; but the device of throwing the bees into a new hive to overcome the swarming impulse is, I believe, that of C. W. Post, Murray, Ont. His plan was published some years ago. He placed two sticks, crossing one another at right angles; and where they crossed they were placed upon a post and joined to it by a bolt, allowing the top part to swing around. Upon each arm was placed a hive with bees; and during the season each hive was given a quarter-turn, thus each day giving the flying bees a new home. Mr. Post, who has had a wide experience, having about four hundred colonies, claimed then, and has claimed ever since, that this system prevents swarming.

In closing, permit me to say I have for years felt that swarming can be easily prevented. Mr. Post runs out-apiaries, and watches for swarms only when other work is to be done; and as several go from yard to yard, and together finish up the work, this is only a small proportion of the time. He does not claim, in the ordinary way, that no swarms issue; but the percentage is so small it is not worth while watching the bees. Between a self-hiver and greater attention to methods of prevention of swarming, a far higher yield per colony will be obtained. I have not had twenty (probably not fifteen) per cent of swarms during the past six years. R. F. Holtermann.

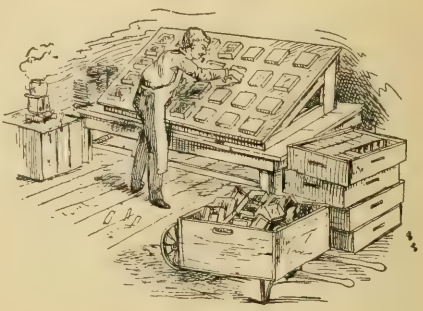
Brantford, Ont., Can., June 13.

P. S.—Since writing the above there is a little experience which may be of benefit to others. Perhaps it reveals stupidity on my part not to have thought of this in the first place, but I have no objections to allowing others to benefit by my mistake. I find the best way when putting on self-hivers is to close the lower entrance and slant the board from the self-hiver alighting-board to the ground, covering up entirely the old entrance, when the bees will readily take to the new. R. F. H.

RAMBLE NO. 88.

HOW MR. HUNT PUTS IN FOUNDATION; NEW SQUARE CANS IN CALIFORNIA AT 72 CTS. PER CASE; RAMBLER'S ACKNOWLEDGMENTS TO HIS LADY FRIENDS.

There is probably no bee-keeper who has been obliged to handle the many pieces that pertain to his calling but has studied upon mechanical means to handle the multitude of pieces more rapidly, and thus cheapen the cost of production; and the many little inventions all show that busy minds are at work trying to make short cuts to the desired end.



HUNT'S METHOD FOR PUTTING IN FOUNDATION.

I found in the shop of Mr. Hunt, of Redlands, several of these cunning devices, and among them a very rapid method of putting foundation into sections. Mr. Hunt's apparatus will be readily understood by reference to the sketch It consists of a wide board upon which are arranged permanent blocks, the thickness of which is half the depth of a section, and large enough for a section to fit quite loosely over it. Any number of these blocks can be thus arranged, but usually as many blocks as there are sections in a crate. It is but a moment's work to pick up a number of sections that have already been put together, and distribute them over the blocks. A pot of white glue, kept warm over a lamp, is placed near at hand; the foundation of proper size is picked up, and the edge lightly touched with a little paddle from the glue-pot, and the foundation is dropped into the section; the board upon which the blocks and sections rest is set up at quite a sharp angle, and the piece of foundation drops immediately against the section, where it becomes a permanent fixture. The whole number of sections for a crate are filled; and by the time the last piece of foundation is dropped in place, the first one is ready to come out, and the whole are soon in the crate. I never saw Mr. Hunt try to compete with the Daisy or any other fastener; but he claims that he can beat any machine made; that his wife can also do the same, and his twelve-year-old boy ditto. There is also an advantage in using glue, for it holds the foundation in place more securely than any other plan. This is quite a consideration where the crates and contents are to be rattled over rough roads, up canyons and down hogbacks. The same plan can be applied to any size of section and to brood-frames.

The subject of old versus new cans comes up again this year, and will continue to present itself until new cans are used altogether in place of the old. This year the old cans cost nearly as much as the new; and under this condition of things there is no excuse whatever for bee-keepers to use them. The chief disad-

vantage in using old cans is, that dealers look upon them with suspicion. So many kerosene-cans that have not been properly cleaned are used, that, in some cases, the honey tastes strongly of it, and is practically worthless. Dealers invariably inquire if the honey is in new or old cans. If in new cans it is easier to make a trade, and at a better price. Leakage from old cans is another important item. It is the usual plan to test them by blowing into them. Place the mouth against the orifice, if the size will admit of it, and blow. If the can holds the air until you remove your mouth it is pronounced sound; but many times a little rust spot or a little line of rust along a seam will afterward break open, under the jolting of teaming, and the result is a lost can of honey. The contents thus lost would pay for several new cans. During the last session of the California Bee-keepers' Association, the secretary was directed to correspond with the manufacturers of cans and cases. In compliance with that request he found that cases with two cans could be purchased in San Francisco for 72 cts. each, in quantities, or 74 cts. with a center-board in the case. It is hoped that the association will have samples of cans for examination at their next meeting, and take strong action in favor of new cans.

And now, Mr. Editor, I wish to occupy a little space in which to thank the many fair correspondents in the East for their kindly interest in the comfort and welfare of the Rambler while on his lonely ranch. I will individualize only a few, and first wish to say to that dear one who wrote from the sunny southland, asking if I was "a real verity" or a fiction, that I am a genuine verity, and have been for several years; am subject to corns and backache just like other samples of the male sex; the apiary which I control, and the cabin in which I live, and the dear old smutty flapjack-griddle, are all verities, just as pictured in GLEANINGS.

Another dear wants to know if I do not want an Angora cat to keep me company. Why, bless you, no! The cat would destroy more company than it could replace by its purring presence. While I am writing this letter a brown bird is hopping around on my doorstep, and a cat would soon exterminate the bird. Three gray squirrels are playing around the wax-extractor, and this evening half a dozen rabbits will come up near my door to entertain me. All of these would fall a prey to the cat. I think if I could live among my pets without being troubled by the destroying and frightening influence of the many hunters who prowl around here I could easily tame the most of my little wild friends. Oh, no! there is no room for cats here.

RAMBLER AND PATENT PATCHES.

A friend in the far East touched a tender chord in my nature by sending a package of automatic patches for my pants. If you have a rent or hole in a garment, all you have to do is to cut a piece of coffee-colored tissue to the desired size, and place it over the rent; then cut a piece of cloth the same size and place over the tissue; apply a little moisture and a warm flatiron, and the job is done. Next to the bachelor's button, that needs no needle and thread to attach it, this patch is the bachelor's next best friend. As the saying is, I am a thousand times obliged to the lady in question. It shows in her a high utilitarian cast of character, which, I am honestly bound to say, I admire. For the benefit of my fellow bachelors, I would say that these patches can be obtained of J. F. Upson & Co., of Unionville, Conn.; 25 cts. per package. In order to render all aid possible, I herewith give a sketch of the way the patch is applied by the

RAMBLER.

THOSE OLD BEE-BOOKS.

ANOTHER PEEP AT THE "GOOD OLD TIMES."

In the year 1679 a great famine in bee-literature seems to have struck England. This was during the reign of the "Merry Monarch," Charles II. This said Charles had in his employ a man named Moses Rusden, a druggist, as Royal Bee-master. That means, probably, that Mr. R. got some of his honey before the jolly monarch, who said he would thereafter eat honey only from Mr. Rusden's apiary. Even to this day, very shrewd tactics are resorted to in England to get the royal indorsement on certain articles of food. This done, somebody's fortune is made. Mr. Rusden's sudden elevation probably put it into his head to write a book on bees; and a more useless compilation than this it would be difficult to find. Still, I am thankful we have the book. It contains 142 pages, 4 x 6 inches. The print is very good, and might pass off as being a hundred years younger than it is. The everlasting mystery about the sex of bees is the burden of it. The writer assumes that, whatever else is true or false, the principal bee in a colony is a king, and he tries to prove this by saying that he had seen the king deposit its seed on his hand. It seems incredible that one who has ever seen houseflies busy with their economy should have failed to conclude that there was not the least probability of a male insect doing any thing of the kind, as there could then have been no inciting cause for the act. On the other hand, how easy to conclude, from what we see of other insects, that it must be a female that made the deposition of matter on the hand! Nature is liberal and even lavish in the use of egg-material, but exceedingly sparing of the life-germ itself. How little Mr. Rusden dreamed, as he looked at the innocent egg of the queen, that the office of the drone toward that egg had been performed long before, and that said drone was gathered to its fathers — or grandfathers, perhaps! The error was the same as if he had confounded a hen's

egg with the subtile principle of life within. What a pity that the egg which Mr. Rusden saw on his hand didn't have a lime shell around it! The error arose from the fact that they assumed that the queen is a true male, the workers true females, each meeting the king in the hive, and that the drones were designed simply to keep the brood warm. What a pity that somebody in those days did not happen to see a queen and drone on their wedding-flight, and thus have given him a hint as to the true office of the drone and the sex of the queen! No one thing helped to confirm them in their error more than the idea that the colony is made and fashioned by the Almighty after the model of the British government. This is seen in those passages where those old writers refer to the loyalty of the bees to their monarch—as if bees had any idea of loyalty, in the human sense! This talk was all to please the king and to gain his favor. If the analogy were to be carried out, why did they not wind up by saying that, when the bees find their monarch has outlived his usefulness, his most dutiful subjects, for the good of the commonwealth, run him through with spears, and put in a new ruler, regardless of his being a Stewart or of the house of Hanover? That would not do—it would savor of disloyalty. But after all it was of but little consequence to them, in the production of honey, whether the queen was believed to be a male or not. The bees themselves understood all about that, and that was the main thing. But it makes a great difference in our day

The only disease that bees seemed to have in those days, 225 years or so ago, was what we call dysentery—at least, the description seems to tally exactly with what we call that.

Mr. Rusden claims that bees have the same senses that men do, and there seems no room to doubt the correctness of his argument, especially in regard to hearing—the only disputed point. He maintains that bees do nothing in their work except by the direct command of their king. I presume he meant to except balling and assassination. He says they never swarm except by command of their ruler. I will here quote a few words:

"The king's government is just, because he oppresseth none; the consequence of which is, unity throughout the whole kingdom. His goverment is absolute, because his orders are never disputed, but obeyed, as well in swarming, and executing their drones and young princes, as in watching and working."

I strongly suspect that Moses meant the quotation above as a gentle hint to certain two-legged kings of his day.

As for hives, it was the old straw skep, every time; but for all that, they seem to have had about as little trouble in wintering as the boys do in our times.

At the end of the book the author says, rather boastingly:

If any man knows any thing
More true than I impart,
Let him disclose it;
Otherwise improve with me this art.

Right under these words somebody has written (I rather guess it was Mr. Henderson, who formerly owned the book)—

Thousands of men, since you wrote this
Conceited book of lies,
Where ignorance is bliss
'Tis folly to be wise.

Standing on the superior plane of to-day, it is certainly interesting to follow the gropings of men in those dark times as they worked toward the light. The progress has always been upward, and some day other people will look down on us for some of our follies. But progress in natural science during the next 200 years will, in all probability, not be so great as it has been during the last two centuries; for our progress has been largely due to the present condition of the microscope, which enlarged our range of view into the little world as much as the telescope did into stellar space.

In this book I was pleased to see that the author frequently refers to Mr. Purchas, 1657, and to Mr. Butler, 1609, the authors of the books I have previously mentioned.

One very commendable thing Mr. Rusden had in view was the abolition of the old system of brimstoning bees to get their honey. This was so distasteful to him that he says of it, "It is like the method of the Devil, who pays his most industrious servants with the greatest ruin." He enjoins his readers, if they have been benefited by his work, to "give God the glory, in beholding his wonderful works in these small and admirable creatures." How much better that sounds than to attribute it all to a blind an unknowing force, with no intelligence back of it, called *nature!* It is all of a piece with every English bee-writer whose books I have so far examined. I wonder whether, that has any thing to do with the stability and general excellence of the British government as compared with the ever-shifting and revolutionary character of some who have said in their national decrees, "There is no God."

Mr. Rusden dates his book, "Near the Sign of the King's Arms in the Bowling Alley, in Westminster, near the Abbey, July 18, 1679."

Medina, July 8. W. P. R.

HOW TO INCREASE THE WHITE-HONEY CROP.

HOW TO CONVERT UNFINISHED SECTIONS INTO CAPITAL: A VALUABLE ARTICLE BY B. TAYLOR.

What a splendid thing it would be if we could increase the white-comb-honey crop 40 per cent! I was in St. Paul some years ago, and had a small quantity of section honey to dispose of. A certain dealer was recommended to me who was said to buy nice honey. I found him, and offered my goods.

"Is your honey white?" he asked.

I said it was very good honey.

He answered, "I don't care any thing about whether it is good or not; what I want to know is, is your honey white? If it is white it will sell whether it is good or not. I know that dark honey is sometimes better in eating quality than white, but it will not sell. If your honey is not strictly white I do not want it; if it is white, bring it along and I will give you a good price."

My honey was not strictly white, and I failed to make a sale. Three poor crops have left St. Paul and Minneapolis markets bare of white-comb honey; and yet dark goes begging. White-comb honey is what we want; and in this article I propose to tell how I expect to increase my crop 50 per cent this year. Last year, at the end of the white-honey flow, I took off all my supers of sections, whether they were finished or not. I picked out the finished sections that were properly sealed, crated them, and then extracted the partly finished ones. This extracted honey I sold readily for 12½ cents per lb. This was more than it would have brought if the sections had been left on the hives and finished with dark honey. I set those empty sections of comb into supers; spread a sheet of paper between each super; covered all tight to keep out mice; and now at the commencement of the flow of honey from white and alsike clover. I have nearly 100 supers, of 24 sections each, filled with empty

combs, and I am filling each super with 12 sections of comb and 12 with full sheets of foundation, the combs having been all leveled up evenly and smoothly on the handy comb-leveler.

Honey is now coming in here at a great rate, as there are 100 acres of alsike within two miles; and I have found cases in which the 12 sections of drawn combs were nearly filled with honey in three days, without those with foundation being touched at all. Clover is just fairly opened. The basswoods are fairly bending with blossoms; and you need not laugh when I tell you that it was my great modesty that made me name 50 per cent as the measure of my increased crop by having sections of drawn and leveled combs in which the bees could deposit their loads of nectar without having to wait to build store combs, for I expect to increase my crop fully 100 per cent this year. When the basswood flow is over I will take off all the supers; take out the finished sections; extract the unfinished ones as I did last year; but the empty combs will be immediately leveled up and returned to the supers, half comb and half foundation as before: and the cases will then be returned to the hives, to be filled with dark fall honey. This honey will, at the end of the season, be extracted, and either sold or reserved to feed the bees and raise millions of workers for the next year's white-honey flow. The empty combs will be given to the bees after they are extracted, to be cleaned of all honey. This will be done by returning the combs to the supers; and then some fine evening, when the bees are flying, set the supers all out in the yard, without any covers, so that the bees can get at them without hindrance, and they will clean them all up by night. In the evening, after all the bees have gone home, the supers will all be removed to the iron honey-house, where no bee can enter, and no robbing will be excited. The combs will then all be leveled up immediately, as they work much nicer when fresh; they will then be returned to the supers, and piled up as high as I can reach, with a sheet of paper between each super, to be used next year in the same way, to secure another big crop of that orthodox luxury—white-comb honey.

Forestville, Minn., June 26. B. TAYLOR.

PULLED QUEENS.

DR. MILLER EXPLAINS WHAT THEY ARE, AND WHY HE PREFERS THEM TO QUEEN-CELLS, ETC.; A VALUABLE ARTICLE.

On page 526, friend Root, you ask C. C. M., of Illinois, to tell "C. C. M., of Ohio," what a "pulled" queen is. A pulled queen may be made to play so important a part that I am glad not only to tell what it is but to tell some of the things about it that may be of use to others. When a colony prepares for swarming, it is well known that a number of queen-cells are started; and about the time the first one is sealed the swarm issues. I may say, by the way, that I am saying this on general authority, for my own experience is that bees oftener swarm before any queen-cell is sealed. In any case, after the swarm has issued, a second swarm is likely to issue; and before this swarm issues, piping and quahking may be heard.

At the time of this piping and quahking, there is a young queen at large in the hive, the one that does the piping; and the queen or queens that quahk in response are mature young queens that have not yet left the cell, but would do so at once if the coast were clear. They are, perhaps, deterred from issuing from their cells by the fear of the piper, or, more likely, because the workers that constantly surround the cell drive them back whenever they attempt to come out. You can take out a frame, pull off these queen-cells, or pull the end off them, releasing the queen, and such a queen is called a "pulled" queen.

It is well known that a young queen just hatched may be put into any hive, and the workers seem to pay very little attention to it. I doubt, however, whether this is so unexceptionally true as some seem to think A queen just hatched may be put into a colony having a laying queen, and may supersede her; but I am sure such will not be the case under all circumstances. Acting on the theory that young queens would be kindly received, and assume control anywhere, I tried one summer to replace a large number of my old queens by putting into the hives young queens just hatched, trusting that they would kill the old ones. In at least some of the cases I found the young queens all right for a day or two, but sooner or later they all disappeared, and, if I remember correctly, the thing was a failure in every instance.

If there had been no laying queen in the hive, or one that for any reason the workers desired to supersede, the result might have been different. It is possible that the young queen gets along on good terms with the workers till she takes it into her head to make an attack on the old queen, when the workers put her out of the way. Still, I have known bees to attack a young queen with no laying queen in the hive, the laying queen having just been removed; but generally, after annoying her somewhat, I think they let her go. While a very young queen will be accepted, at least for a time, almost anywhere, it is well known that a virgin queen several days old is difficult to introduce. It may be, then, that the difficulty of introducing increases with age, and that a queen that has been held in her cell by the workers for a day or two is not so readily received by the bees as one that has not yet attained sufficient age to try to leave its cell. I am inclined to think such is the case.

At swarming time, when it is a common thing to find ten or more queen-cells in every hive from which a swarm has issued, the supply of pulled queens is likely to be greater than the demand, so I have generally paid little attention to the appearance of the cells, but pulled all indiscriminately; and if the queens were not ripe enough it was an easy thing to throw them away. To be serviceable, it is not necessary to wait until a young queen is gnawing its way out, nor till it is well colored. No matter how green-looking a queen is, if it is mature enough to hold on to the comb and travel over it, it will be all right. Younger than this, the bees will drag it out, just as they would a dead bee.

In forming nuclei I think it much better to give a pulled queen than to give a queen-cell. It is less trouble. There is less risk; for there are a good many cases, whatever may be the reason, where a good-looking cell contains a dead larva, and sometimes a dead queen that looks fully matured. It saves time, for the cell may be several days hatching. Besides, if there be any advantage in having a young queen raised in a full colony, and I think there is, a pulled queen has that advantage to the full.

A pulled queen is the quickest and easiest cure for laying workers. So far as I have tried it, it is a sure thing. Just drop a pulled queen on the comb among the brood, and that's all. I believe that, if you try pulling queens, you will not be sorry. C. C. MILLER.

Marengo, Ill.

JAKE SMITH'S LETTERS.

THAT PALLUS HIVE A FAILURE.

MR *A. I. Gleanings—deer Sir:*—You know that bee pallus I got. Last yeer it diddent do nothin, but then it was a bad yeer. I took hart when I see how the white clover was a boomin evry-where this yeer, and evry little while I lookt into it to see if the bees were a bildin down into it from the hive a sittin onto it. Finelly 1 day I see the bees a hangin down into it a little, and my hopes begun to raise. You know the agent sed how the bees wood fill it fool of combs, and hunny, and never swarm. And he was a reel nice-appearin man.

BOOKS THAT HAVE HELPED ME
(IN THE HONEY BUSINESS.)

Well, it wazzent but a phue days after that when out cums a swarm. I hived it into a skep washed out with salt water. They say the bees likes that. Then in a week or so anuther swarm cum out. And, wood you beleave it? they was anuther still. That left the old hive so week it wazzent no good hardly, and I jist took it off from the pallus and sot it down on the ground. Ime dun with that pallus. I haint no faith into it. For at the rate it has gone so far, it wood take 100 yeers to git it filled.

Now what I want to know is what use I can make out a that pallus. Wood it be good to raze your chickens in, or to raze sellery? Glass mite be poot on top. Mebby you cood tell, Mr Gleenings, in them pages of your magazeen where you tell about razin stroberries and cabbidges.

That magazeen of yourn is a rite good book. Zed is wonderfully took with it. And my old woman she likes them eggzortations of yourn. But I doant see that you and R. H. Randall makes out right clear how evil cum into the world. Also I doant see how it makes so much difference. Around here we are a good eel more interested to know how to git it out than to know how it cum in. The uther day the old sow got into the garden, and we diddent stop to argy how she got in, but jist all of us set to and druv her out. If we had stopt to argy if she got in the gate or under the fence before we jined forces to git her out, we mite hed more nollidge, and agin we mitent, but wede a hed a good bit less garden sass.

That A B C book of yourn is tiptop. Do you have a First Reader that cums after it? If it keeps on to the Fourth Reader they must be a good deal to lurn about keepin bees. But your way of keepin bees is a good eel different from ours. Seems to me if you never took up no bees in the fall but jist kept them all, that the whole farm would git cuvvered with bees. But I must say it always did look kind a tuff to smuther the poor little insecks after thade worked hard all summer long to git sumthing ahed for winter.

Zed says we must adop the new methods, but it seems kind a queer like to think you can git more hunny by leavin the bees to eat it up in the winter.

I see a peace in a paper rit by a man in Cleveland tellin how he had been grately helped in gittin hunny by a number of books. Zed thot it wood be a good thing after we got threw the A B C to have some more books, so we sent to the Cleveland man for a list of the books that had helped him. He diddent send no list, but sent us this pickter a showing how the books had helped him in the youthful period of his childhood. He got the joke onto us pirty good, diddent he? JAKE SMITH.

HUMBUGS AND SWINDLES.

The United States Department of Agriculture has seen fit to send out an extra bulletin, cautioning farmers against

NOSTRUMS FOR INCREASING THE YIELD OF MILK.

The bulletin is by Prof. H. W. Wiley, Chief Chemist of the U. S. Department of Agriculture. The principal swindle is the black-pepsin fraud; and the whole thing seems to emanate from the man Bain, hailing from the vicinity of Zanesville, O. This Bain seems to be not only the *bane* of our State, but if we do not get him into the penitentiary speedily he will be the bane of the whole United States; and although the black pepsin has been shown up again and again by almost all of our agricultural papers, it seems that thousands upon thousands of dollars are still being paid by the farmers and druggists into the pockets of this Bain. We

have felt it fitting to make the following extracts from the bulletin:

METHODS OF ADVERTISING BLACK PEPSIN.

In respect to the method of advertising black pepsin, the direct way of sending postal cards and circulars to the farmers seems to be the one chiefly followed.

A vigorous attempt has also been made to interest the druggists of the country in the sale of this article, as well as others of similar character. Following is a copy of a postal card which has presumably been sent to the drug-trade in general. It was addressed to Otto Bauchfuss & Co., Cincinnati, Ohio. The card was mailed at New Concord, Ohio, April, 1893:

PRICES FOR 1893.

We will expend in 1893 $125,000 advertising these specialties. Place these on your lists, as you will certainly receive orders.

BLACK PEPSIN.—A powder prepared expressly for increasing the yield of butter and cheese. Each box will make 500 pounds of butter. Retails $2.50 per box, $24 per dozen. Ten per cent off to wholesale and jobbing trade. Three per cent off for cash in ten days.

ELECTROFIED SILVER.—A metal for plating articles usually plated with silver. Can be used without any battery, and requires no experience to apply it. You can plate a dozen spoons in fifteen minutes, and guarantee them for ten years. Each package will do $350 worth of plating Retail price, $7.50 per package, $75 per dozen. Ten per cent off to wholesale and jobbing trade. Three per cent off for cash in ten days.

COMPOUND EXTRACT OF SALYX.—A powder for preserving fruits and vegetables. Each box preserves 25 gallons of fruit. Retails at $1.25 per box; $10 dollars per dozen. Ten per cent off to wholesale and jobbing trade. Three off for cash in ten days.

U. S. SALYX CO.,
New Concord, Ohio, Sole Proprietors.

The electrofied silver mentioned in the above card is, without doubt, some mercurial amalgam, and is a striking example of how freely in this country the vender of poisonous articles is allowed to bring them to the notice of the trade.

"The compound extract of salyx" is the gorgeous title under which the modest salicylic acid is made to masquerade.†

Many of our friends will remember of having seen mentioned "electrofied gold," in an item going through the press, purporting to come from a woman whose husband was an inebriate. By means of the electrofied gold, which she bought at a drugstore, she had entirely cured her husband, or he cured himself, of the appetite for strong drink. After going to the drugstore, and finding that the druggist had never heard of such an article, the interested ones usually write to this poor woman who told such a plaintive story, and was glad to help people to avoid the expense of going to a Keeley institute. The treatment at the latter institute costs from $50.00 to $75.00 or more; whereas this good woman will send them a package of the above electrofied gold for two or three dollars.

Prof. Wiley, on page 6 of the bulletin referred to, tells us, "The value of the two-ounce box sold at retail for $2.50, is about 3 cents."

To sum it all up, Bain charges the farmers of our land $2.50 for a powder, the material of which costs him only 3 cents. But this is not all of it. After all is said and done, the powder has no virtue at all in converting the milk into butter. If the friends who have been buying the recipe, and paying for the powder, hadn't been too stupid to try it they would have discovered that they could make just as good butter without the powder as they can with it. The emulsion of butter and milk looks like butter and tastes like butter, and might humbug almost any one who did not notice particularly whether he was eating butter or cheese. It must be eaten up quick, however, for it will not keep long in hot weather. The astonishing part of it is, that thousands of dollars have been spent in this country, and are being spent even now, and perhaps will be for some time to come, for this foolishness. It seems to me that every periodical in our land should lend its aid toward exposing this humbug before it is a day older; and we all owe a vote of thanks to Prof. Wiley for having sifted the matter so thoroughly. We bee-keepers know something about salicylic acid; and it is really refreshing to note the way in which friend Wiley describes the whole swindle.

Since the above was in type we have clipped the following from the *Ohio Farmer*, of Cleveland, O.:

These butter nostrums are old. They have repeatedly been exposed by the agricultural press, and yet each succeeding effort, under a new name, finds plenty of victims.

A well-known citizen of this city, last year became a victim to this fraud. He saw two pounds of butter made from one pound, by the use of a powder, and was convinced. He invested ten thousand dollars in the "company."

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* We have already cautioned our friends in regard to this California cold process for preserving fruits; but this is the first time I ever knew that Bain was at the bottom of that also. I should not be surprised if it transpired that all the various letters from farmers' wives, farmers' daughters, or widows with large families, which appear in our various papers, have all emanated from Bain. When a poor woman tells how she has made money, and helped an aged mother, or something of that sort, everybody is glad to read her account; and even our editors, who generally have the credit of being sharp, some of them, it seems, did not think that the clipping so innocently published was simply a big drive to advertise a most stupendous humbug. Those who took *pay* for inserting such letters in the reading-columns are not fit to be editors.

† Hasn't Prof. Wiley hit it to a dot in the above wonderfully expressive sentence?

ANSWERS TO QUESTIONS

FROM BEGINNERS.

M. C. D., of Connecticut, asks if black bees work on alsike clover to any extent. *Ans.*—Yes, as well as any bees; though they are not so good for working on red clover as are the Italians.

W. B. of Michigan, desires to know the merits of the State of Arkansas as a bee country, and whether the markets are good. *Ans.*—We'd advise W. B. to stay where he is. Michigan has a rather better reputation for honey than Arkansas.

R. M. C., of South Carolina, wishes to know what kind of clover is best to sow for bees. *Ans.*—Alsike will grow everywhere that white clover does; and it is the kind of clover that we usually recommend. Four pounds should be sown per acre. It can be purchased of any of your dealers.

W. R., of Florida, asks what plants we recommend for honey in his State. *Ans.*—We would grow nothing that would not pay independently of any supply of honey that he might get from it. If there is an orange-grove, or field of alfalfa, in his vicinity it would probably pay to move the bees to it.

T. V. B., of Ohio, desires to move to a location where bees may be kept with the greatest profit. *Ans.*—California, Arizona, New Mexico, and Colorado are good bee-countries; but as a general thing we would not advise any one to move if he has any other business he can tie to in connection with bee-keeping where he now is. Bee-keeping is a success or a failure in nearly every State in the Union. A great deal depends upon the man.

B. B., of North Carolina, writes that some time since he hived a swarm of hybrid bees that had six or seven queens, and that a neighbor who keeps bees in "gums" reports a swarm

with several queens. B. B. wants to know whether that often happens. *Ans.*—A swarm is quite apt to have more than one queen with it, especially if it is a second swarm. In that case there may be four or five virgin queens.

B. F. M., of West Virginia, inquires in regard to a certain suspected sample of diseased brood, a sample of which he sends. *Ans.*—We are not of the opinion that the brood in question is affected by what is known as foul brood. It is a good deal like what was described last year in GLEANINGS, page 594, Aug. 1st. It occasionally gets quite a start in an apiary; but as it is not very infectious it goes off itself when the honey begins to come in. We think you will find the brood to be all right further on in the summer.

J. A. S., of Virginia, desires to get as many Italian drones as possible from his two Italian colonies. All the rest of his stocks are blacks. *Ans.*—Uncap all the drone brood in the black colonies. Give the two Italian colonies each a frame of drone comb, putting the combs in the center of the brood-nest. If no honey is coming in, feed them about half a pint of syrup daily. As soon as drones from Italian colonies are hatched out and ready to fly, put drone-guards over the entrances of the black colonies, and the chances are that your queen will be fertilized by Italian drones.

A. C., of Illinois, desires to know when it is the best time to requeen. *Ans.*—During the swarming season. A number of nice and choice cells will be at hand, and hybrid or other undesirable queens can be disposed of, and the choice cells put into queen-protectors can be given to the colonies. This will, for the time being, stop all swarming; and by the time the young queen is laying, all ideas of swarming will be given up. There is no use of talking, we get better queens from cells reared during the swarming season. We formerly disputed that, but we now take it all back.

W. C., of Illinois, wishes to know whether it is advisable to take off the sections as fast as they are filled, or leave them on the hive until after honey-gathering is over. *Ans.*—In large apiaries it would hardly be practicable to take off every section as soon as it is nicely completed. The usual practice is to leave the crate on until most of the sections are filled out, and then remove it. The partly finished sections can be put together in one or more crates, and put back on the hives for the bees to complete, providing the honey season has not already ceased. The only objection to leaving the honey on longer than when fully completed is, that it becomes travel and propolis stained, and, of course, is less salable.

H. T. G., of Florida, desires to divide, and give queens to the queenless halves of the divided colonies in the most economical and satisfactory way. He has had difficulty in rearing queens. *Ans.*—During the months of August and September, untested queens will be down quite low. In lots of a dozen they can probably be purchased for 60 or 65 cts. apiece. See our advertising columns. These queens, while cheap in price, will most of them prove to be as profitable and serviceable as any; and it is certainly an advantage to buy queens occasionally, outside of your own locality. In this way a new infusion of blood will be secured. If our correspondent prefers to rear his own queens we would recommend to him any of the methods in the text-books.

H. H., of Pennsylvania, wishes to know whether we would recommend the Simpson honey-plant for his locality. *Ans.*—It is in some respects a remarkable honey-plant: and as it blossoms shortly after clover, and continues to be in bloom till nearly frost, a small field of it goes a long way toward keeping the bees out of mischief, as the bees work on it from morning till night; but after having tested it carefully, the expense of setting out the plants and keeping them in cultivation is, many times, more than can be gotten out of it. There are some places where it grows naturally; but it is not advisable to grow this or any other honey-plant that is not valuable aside from the honey it produces. Artificial bee pasturage should be confined to the clovers, buckwheat, and seven-top turnip.

J. C. S., of Arkansas, has a lot of bees on a farm 18 miles distant; and he desires to know whether he can, at this season of the year, bring them home safely; and if so, how. *Ans.*—We would avoid moving bees in the height of a honey-flow; and under no circumstances would we do so then unless we were sure that the bees would get more honey in another location. If the weather is warm, or what may be termed "hot," with the mercury running up to, say, 90 in the shade, we should prefer to fix up the bees about 3 o'clock in the afternoon. We would fasten the frames, if they are loose or the old-fashioned kind; tack wire cloth over the entrances, and fasten wire cloth over the top. Bees, during hot weather, should not have any regular hive-cover on while being moved. If a colony should be a very strong one (and such is pretty apt to be the case), the bees should be put into two hives or else have an empty upper story, with wire-cloth cover. As soon as the bees have quit flying, load them on the wagon and bring them home by moonlight, if you can select such a night in the month. As soon as you arrive home, place the hives on their permanent stands, and remove the wire cloth from the entrances, so that if, in any case, the bees should be suffering from want of air, they can be relieved.

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

MRS. HARRISON'S BEE-HAT.

I want to speak in favor of Mrs. Harrison's bee-hat. I have one, and I think it is ahead of all the veils I have tried, as it is not easily soiled or torn; can be easily put on, and is safe. For the cape I take two pieces of calico (or any thing you choose), 18 inches square; sew together about 5 inches on each side; now sew it to your wire cloth, letting the seams you have just sewed come on the shoulder; now attach a string or band at the lower corners of the back cape. I put a band clear across the lower end of the back cape to make it stronger, letting the ends come out long enough to tie over the front cape across the bust. The only trouble I have found with it is, I can not eat the burr-comb honey when taking off honey.

Barron, Wis., June 27. MRS. F. G. HALL.

FRIEND JENKINS ON A WHEEL.

Friend Root:—Hail, brother wheelmen! I am one of you now. Ever since the safety has been abroad in the land, I have yearned for one; yea, verily, have *ached* for it; but, as you know, I am a cripple—one leg gone—and I doubted my ability to manage a bicycle successfully, so that I never felt justified in investing the price of a good wheel in the experiment. But I have a cousin and his wheel with me now; and the first thing with me was to tackle that wheel, and settle that question as to whether I could ride one or not, no matter if it

did stand me on my head a few times, and run me into fences and ditches occasionally at first, and even attempt to ride *me*, seemingly. I am master of it now. I rode it four miles over a common country road last week, and succeeded in making a sleepy, innocent-looking mule I met run away with a buggy and two men, and tore the buggy all to smash. The festive mule, the innocent travelers, and the wicked "wheel" with its rider escaped injury. It seems as though anybody with two good legs could do well with a bicycle, if *I* can ride one. It is going to be a great blessing to me, for I can't walk half a mile or more without pain and fatigue, and it is *fun* to run a good bicycle. In walking, my artificial leg has to do half the work; but on a wheel it need not do any of it, except, perhaps, in climbing a hill or incline. I'm sorry I didn't have one long ago. You know the rest. I indorse all you say in favor of the modern safety bicycle. J. M. JENKINS.

Wetumpka, Ala., June 28.

BEES REFUSE TO GO INTO THE SECTIONS.

What shall I do to get my bees to store honey in surplus boxes? I have put on boxes from other hives containing bees, and partly filled boxes from hives that were working well. The brood-nest is full of honey. I have three colonies in this condition. I have also filled boxes with drone brood, and placed them in the middle of the crate. They cleaned out cells having eggs and unsealed brood, and allowed sealed brood to remain. Ten other colonies are working well. J. N. HOWELL.

Greenway, Ark., June 22.

[We should be tempted to pinch off the heads of the queens in the three colonies, if the other bees in the apiary are working briskly in sections. There are some strains of Italians that seem determined to stay in the brood-nest. Such bees do very nicely for extracted honey, but are not very satisfactory for box honey; and, sooner or later, we would introduce into those three colonies queens whose bees will go above. If you do not care to kill the queens of the three colonies, place the bees on empty frames. If there is any honey coming in, it would be more convenient for them to store it above than to wait to build out combs.]

CONTRACTING THE BROOD-CHAMBER FOR HONEY; HOW MUCH AND WHEN ADVISABLE.

We are much pleased with the Dovetailed hives which father ordered of you a short time ago, and have nice big swarms in five of them. The question I wish to ask is, whether it would be advisable to contract the brood-chamber on the eight-frame Dovetailed hive to about five or six frames for prime swarms. We have read Mr. Heddon's views upon this subject, but we should like to know whether you think it advisable to adopt the system for the eight-frame Dovetailed hive or not. We have contracted the five swarms which we have in Dovetailed hives to six frames, using two division-boards and perforated zinc strips on top of the frames. One of the swarms left its hive the second day, and took to the woods. What is the reason? Does the zinc strip take up too much of the bee-space on top of the frames?

LEE THOMPSON.

Monument City, Ind., June 8.

[Very much more used to be said about the advisability of contracting the brood-nest to crowd the bees up into the sections; but as the years have gone by, bee-keepers are beginning to feel that more harm than good is often done. The bees are more apt to swarm, with the contracted brood-nest, and are liable, if contraction is carried too far, to carry pollen up into the sections. As a general thing, we would not contract the brood-nest of an eight-frame hive. If the eight combs are pretty well filled with brood, the bees will be compelled to put the honey above. A good deal, however, will depend upon the locality. In some places the eight combs, when well filled with brood in various stages, brings on a big force of bees after the honey season—just the wrong time of the year—that is, when they will be *consumers* and not *gatherers* of honey. Where the honey-flow comes on early in the summer, and there is nothing more, and no increase is desired, it may be desirable to curtail by contraction the brood-nest just at the approach of the honey-flow.]

SEVEN-TOP TURNIP AS A HONEY-PLANT.

Friend Root:—I have for some time been thinking of writing to you to know if you grow as much southern seven-top turnip seed as you could dispose of. I have just filled a contract for over *two thousand pounds*. I contract with seedsmen to grow as much as they wish. This is the largest contract that I have ever filled, but I don't think I should have much difficulty in supplying as much more, as my land is well adapted to this variety.

I don't know of any thing that we have in this section that builds up bees faster. Had it not been for it this year I don't know whether I should have had any increase in bees. It put my bees on a boom; but, alas! after it was over, there had not been honey enough for bees to whiten their combs, on account of the cold windy weather.

I never set out with brighter prospects, but I have no hope of any more honey until cotton blooms. J. D. FOOSHE.

Coronaca, S. C., June 23.

OUR RESPONSIBILITIES, ETC.

Friend Root:—In your footnotes to Mrs. Hawkins' remarks about having their house burned for reporting an illicit distillery, you say that it "indicates the tremendous need of more Sunday-schools and more Endeavor societies." To my mind, the great responsibility lies in the hands of the voters, who can, by electing men who would make laws, prohibit the making and selling of alchohol. The children in our Sunday-schools, and the young people of our Endeavor societies, can never put down intemperance so long as their fathers vote to sustain it, or vote for parties who do sustain it; and very likely they will grow up to vote as do their parents.

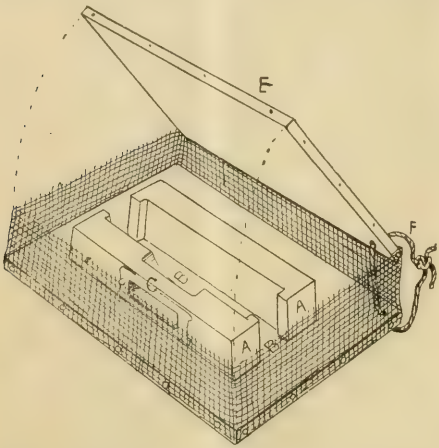
A friend of ours lies very low with consumption. Doctors advised her to use new milk, but she could not use it, as it hurt her. I took her GLEANINGS, and had her read what Mrs. John Collins has to say about adding a tenth water, and heating the milk to 120°; and now she is able to use it without any ill effect, and finds it very refreshing, and is delighted to find she can use it. Many thanks to Mrs. Collins, and GLEANINGS for reporting it.

Roseville, Ill., June 26. MRS. L. C. AXTELL.

FERGUSON'S QUEEN-CAGE.

Mr. Root:—I send you to-day a queen-cage which I invented three years ago. I will not describe it in detail. Your trained eye will readily take in all its points of excellence. I have never known a queen to be lost, introduced in this cage. Take a little piece of square stick and charge the space in the center full of candy; then run the queen in and tack down the loose end of the wire; suspend the cage between the combs by running a wire nail

through the hole. In 24 hours the bees will have eaten down and entered the cage through the perforated zinc; in 24 hours more they will have eaten all the candy out of the tunnel, al-



lowing the queen to be liberated. This is the best and only real automatic cage ever invented, in my opinion. I. FERGUSON.
Bellevue, Pa., June 8.

[Friend Ferguson has indeed introduced quite a unique feature in his cage for introducing. There have been cages devised heretofore, making use of the candy and a piece of perforated zinc; but after the bees had eaten out to the perforation they could get in to the queen, it is true, but they could not liberate her; so it was necessary for the apiarist himself to finish the final operation, and release the queen. Friend Ferguson has gone one step further, so the bees can release the queen after a few of them have had the opportunity for formal acquaintance in the apartments of the queen.]

HOW TO GET THE BEES OUT OF THE CORNER.

Sometimes when I hive a swarm of bees they get up in a corner, or stay in one end and build out their cells all in one place, leaving the greater part of the hive empty. Would it be advisable to reverse every other frame or every frame, or hive them alone?

Just now bees are in the swim; horsemint in full bloom; every worker bee has a silver spot on its back—a sure indication that it is loaded with nectar from the mint.
Mexia, Tex., June 5. E. N. SWINBURN.

[We would advise you to use full sheets of foundation, and then reverse the frames from end to end, as you suggest. For instance, if the brood in several frames seems to be all at one end, put every alternate frame, containing brood, the other end to. This will spread the brood.]

TRANSFERRING BY HEDDON'S SHORT WAY; QUESTIONS ANSWERED.

In your footnote to G. M. Doolittle's article on fastening combs in transferring, you highly recommend Mr. Heddon's method of transferring. Now, please tell me, 1. what you do with the young queen that the bees left in the old hive will have reared during the time the remaining brood is left to hatch.

2. Will you get as much surplus from the colony transferred as though you transferred bees and brood at the same time, by using the old combs, as Mr. Doolittle does?

3. As to the amount of surplus gathered, does it make any difference what time in the season they are drummed out? A GREENHORN.

[1. The queen left in the old box hive, if one should be reared may be captured at the last drumming-out. If she is a better queen than the old one, kill the old one, and introduce the new one to the bees drummed out three weeks previously. If she is no better than the old queen, just let her run in with the rest of the bees into the new hive, and the stronger queen of the two will remain in possession.

2. Yes, we think you would get just as much honey.

3. It would make some difference. It is best not to disturb the bees when they are in the midst of a honey-flow, more than is absolutely necessary. It is preferable to transfer as early in the spring as possible, whether by the Heddon or any other method.]

ANOTHER CORRECTION IN SPELLING.

Pleze tell Ellery Krum hee doant no howe too spel worth schux. Thee eyedeea uv spelin *muncki*, "monkey!" Moast eni muncki noze beter. Eye ges eye waant won ov them pokerdot queans heze goin to raze.
GEORGE WASHINGTON BILLINGS.
International Bridge, Can.

REPORTS ENCOURAGING.

Bees are doing finely here this year.
JAMES A. DIDDLE.
Winifred, W. Va., June 19.

This is an "elegant" season for honey, with us. AMOS EVANS.
Cassville, Pa., June 19.

R. WILKIN'S BOOM.

I have 17 tons of choice honey, and 175 increase from my 250 hives this season.
Newhall, Cal., June 16. R. WILKIN.

My bees are booming, and bringing in the nectar. Every thing points to a large honey-yield. W. A. HAMMOND, M. D.
Paris, N. Y., June 20.

Bees are carrying honey rapidly for us. It really seems like old times to go among the hives now. We haven't had a good crop in 7 years. H. D. BURRELL.
South Haven, Mich., June 19.

We have the best crop of honey that we have had for 10 years. Nearly every hive has 48 sections finished. PERCY COVINGTON.
Appleton, Md., June 21.

The bees are just rolling in the honey from clover. Swarming is nearly over. I have several colonies that are filling their third super.
Flat Rock, Mich., June 24. D. I. WAGAR.

Our honey crop bids fair to be a good one this year. Mr. L. A. Sawyer is taking care of our bees this year. He has taken considerable honey already. MRS. LUCY C. SLEASE.
Roswell, N. M., June 27.

Bees are booming; business is booming, and bee-keepers are feeling tickled. It is an old-fashioned honey season. I hear of a party that has taken off 600 lbs. from a few colonies. Clover is yielding immensely.
F. A. SALISBURY.
Syracuse, N. Y., June 27.

Our bees are doing well. Had 160 colonies, 290 now; have taken ten tons of honey, and still at work. I produce extracted honey only. I am located 3½ miles from the railroad.
Piru City, Cal., June 10. JOHN HOLSER.

Bees are booming; weather is fine; white clover in abundance, and every thing points to a big flow. Swarming commenced June 9, and continues with unabated fury. Fatality among bees in this vicinity was great during April, mostly spring dwindling. A. Y. BALDWIN.
De Kalb, Ill., June 19.

Bees haven't done better for ten years. They have the surplus arrangements filled. Honey sells readily at 18 to 20 cents. The bees are swarming some. We have had a honey-dew for two weeks, and the poplar, basswood, and white clover are full of bees.
C. E. SHRECKENGOST.
Putneyville, Pa., June 27.

Bees have been booming for the past week; even the weakest colonies are filling up their hives with brood and honey fast. Nearly all the better colonies are working in the sections; some of them have one case of 28 sections full of clover honey, which is in full bloom, and very plentiful. Linden promises much; trees are loaded with buds, which look healthy.
C. THEILMANN.
Theilmanton, Minn., June 21.

BIGGEST HONEY-FLOW IN YEARS.

We are having an old-fashioned season here for honey. The fields are white with clover, and the bees are just booming. It yields honey this year. Basswood is commencing to bloom; can't say yet how it will yield; but if it does fairly well we shall get the biggest yield of white honey in four years. In fact, we have already, on clover alone. S. H. MALLORY.
Decatur, Mich., July 6.

Honey is coming in fast now, and it is nice. If my bees had been strong this spring I should have had more honey by this time than in any other year since I have had bees. You can tell how the honey is coming in, for I put a swarm on combs, and they filled the hive with honey, and capped it in five days; that is good enough; I have about 600 lbs. in sections now, and they have worked better to-day than ever before.
Dover, Mich., July 6. A. N. WHITLOCK.

BEST HONEY SEASON SINCE 1888.

Friend Root:—We have had, and are still having, the best season since 1888. The season opened with a good flow from cherry-bloom. Three days of very warm weather at the time enabled the bees to restock their hives with stores, and gave brood-rearing quite a boom. Then four days of hot weather during apple-bloom crowded the stronger hives with honey, and enabled me to extract 200 lbs.—something which occurs but about once in five years here. After the fruit-bloom, horsechestnut, hawthorn, and locust kept the bees moderately busy till white clover. This is a great year for the clovers. I never saw the roadsides and fields fuller of white clover. Basswood is about opening, and promises well. This, with sumac, sweet clover, catnip, etc., will, with an occasional rain, keep the bees busy till about the 25th of the month, when our white-honey season here usually comes to a close. Last season bees were on the brink of starvation all through June, and began to gather a surplus only about July 6. JAS. MCNEILL.
Hudson, N. Y., July 8.

OURSELVES AND OUR NEIGHBORS.

And he said to them all, If any man will come after me, let him deny himself, and take up his cross daily, and follow me.—LUKE 9:23.

A great circus was coming to Medina. The bills were up all over the town, and for days people would stop and look curiously at the great colored pictures. For a number of years circuses have given Medina a wide berth; in fact, for several seasons no circus at all has come to our place. It was reported that the showmen gave, as a reason, that the town was so *puritanical* they could not get enough to pay expenses. Of late, however, they stop here, usually once in a season; and I fear they are pretty well patronized also. Now, in saying this I take into consideration that a great part of my readers may not agree with me that circuses are, as a rule, demoralizing; and it is possible that I am wrong about it. I do not *think* I am wrong about their being demoralizing, after all; but it may be possible that there is enough good connected with them to counterbalance the evil. I say *may be;* yet I feel very sure that I am right. A great many times during the past few days I have been asked to give my reasons for hating circuses. Well, in one sense I do *not* hate them. A young friend of mine said, a few days ago:

"Why, Mr. Root, if you do not like circuses, of course you do not need to go to them; but why not let other people, who do like them, use their own judgment, and go?"

"But, my young friend, you are mistaken. I *do* like circuses; and I feel sure I should greatly enjoy going—that is, there would be one kind of enjoyment. This enjoyment, however, would be greatly marred by the twinges of a guilty conscience. To tell the truth, it is quite a cross to me now, and has been all my life, to stay away from circuses. I feel ashamed of myself when I admit it; but perhaps I can help you more by confessing the truth."

I have sometimes thought there were few people in the world who have such keen enjoyment—that is, enjoyment of a certain kind—in worldly things, and perhaps I had better be still plainer, and say *sinful* things, as I have. But the constant thought with me—that is, I hope it is my constant thought—is not, what I *want* to do or would *like* to do, but what I *ought* to do. I have told you about having times of temptation when I could say, almost with a groan, "Oh, I wish it were not wicked to drink lager beer!" Well, I have lately said to myself, not with much of a groan, however, I am free to confess, "Oh, I wish it were not wicked to go to circuses, and take the children!" How I should enjoy going with the little ones, and explaining things to them, providing the innocent part of the entertainment could be separated from the wrong and wicked!

Perhaps some of you would like to have me define more particularly about the wrong and the wicked. Let me say, first, that there are extremes both ways in this matter. A very good Christian friend of mine can not be satisfied because I have taught that it is right to go to fairs, and take the children. He thinks fairs are wicked—that they are the works of the Devil. Well, so do I, to a certain extent; but they are, in a measure, educational, like our schools, and the fairs belong to *us* as a people. We can stop the gambling, the horse-racing, and the drinking; and we *are* stopping all these things by going with our *families*, and taking right hold of the management, and insisting on decency and sobriety. Now, the circuses are not ours. They are mostly in the hands of men whose aim is to make money,

with little or no regard as to how they get it. When the bill-posters came along they wanted to give me some tickets for the privilege of using steam from our boilers, to make their paste. What ought I to have done? Well, may be I did not do the wisest thing; but after studying a moment I told them they could have the steam, but that, if they would excuse me, I did not care for any tickets. They may have given some tickets to the engineer and his assistant. I decided it was their business to accept them or not, as they might choose. Then they wanted to water the animals at our hydrant. I have never yet refused drinking-water to man or beast, and I hope I shall never be obliged to; but while they were watering the animals, one of the bosses, to show off, or to show his authority, gave vent to a string of oaths that was really hideous. Very likely he thought it was a good opportunity to impress the people, mostly boys and girls, with the fact that skill and practice had made him pretty nearly perfect in doing more cursing and blaspheming in fifteen minutes than anybody else they had ever heard. It was before our Sunday-school children, members of our Endeavor societies, and before little boys and girls who had probably never before in their lives heard any thing like it. You may say the managers of the circus were not responsible for this; and you may urge, too, that many railroads are managed by a good many of that sort of people. Yes, that is true; but I think the worst swearing I ever heard in my life was around circuses, and I never saw a circus free from it. Again, we not only have swearing and drinking, but more or less *gambling*, interwoven all through the network of the circus management. I have been told there is such a vigorous protest against the gambling that there is less of it now than there used to be. I sincerely hope so. Last, but not least, every circus must have a troop of women performers. Without them the circus would go down. Let it even be noised abroad that there are no women, and see how it would kill out the show. As an illustration: Popular taste, or a sort of low brute taste, demands that rope-walking be done so high up, that, if a performer falls, it will be very apt to kill him. Pray tell me why people could not pay just as much money to see it if the rope were only *two feet* above the ground. In the same line, popular taste demands that the acrobat perform on a trapeze up in a balloon. People would not pay over their money unless the performer is so high up that, in case of an accident, he will be crushed to a jelly. Now, I think it is the same taste, or a worse one, that demands that *women* and not *men* shall come before an audience in a nude state, or as nearly so as the laws will permit, and perform. I once heard of an enterprising showman who found a man so womanlike in his appearance that they fixed him up and passed him off for a woman. It was discovered, however, that a monstrous fraud had been perpetrated on an innocent and unsuspecting public. A woman was pictured on the bills, and she was advertised as a woman; but after they had paid their money, with the full understanding that they were to see a *woman*, it turned out to be a *man* fixed up. Now, is it not true that the taste that demands one shall risk life before you pay over your half-dollar, is exactly the same *sort* of taste (only a *worse* one) that demands that a woman should risk or *throw away* what is more to her than life? I am not preaching at *you*, dear friends; for it would very poorly behoove me to do so while I remember that, when I used to go to circuses, I demanded pretty much the same things that you demand; and if I listened to that same low spirit that demands that men shall risk their lives, and women risk something *more* than life, *I* should feel indignant, with the rest of the world, after I had paid my money to see a *woman* perform, and then discover that she was *not* a woman. When somebody will come out with a circus without women performers, without risking life and limb, and with no more profanity, intemperance, or gambling than we meet at fairs, I believe I shall go to circuses and take all the children. Skill in gymnastic exercises is a good thing. It is taught in our schools, and some of the finest experiments in mechanics and natural philosophy I have ever seen were in circuses. I like to see a wheel-rider so expert that he can take a common wagon-wheel and ride it around before an audience. But this will do for the matter of circuses. Let us now turn to our text.

Our boy Huber is of just the age when it would be supposed he would find it a hard matter not to go with all the rest of his playmates and associates. I rather expected he would go, and felt sorry to think I could not conscientiously go with him. I gave him permission to do as he thought best in regard to the matter, as I have done with all of our children. He made up his mind, however, before circus day came, that he was not going—not because his father said he must *not* go, but because he did not choose to go anywhere that his father could not approve of. I confess it made my heart ache to see him move his playthings to the opposite side of the house from the one that gave a view of the great tent with its crowds of people. May God help me to reward him! And just here comes in the thought expressed in our text. If any man will be a follower of Christ Jesus, he must deny himself—not only now and then, but "daily," as Luke puts it. Toward evening, after the show was over, some of the family, I do not remember which one, asked the question:

"But what is the good of depriving ourselves of these things that everybody else seems to think not particularly wrong? In other words, what shall we gain by being so very strict and precise?"

As soon as the question began to be framed, I was dimly conscious that there was some special promise in the Bible to the faithful, right along this very line, but I could not recall it just then. I said something like this, however:

"Dear friends, we have a plain and clear Bible promise that we shall receive tenfold more than we give up, here in this present world, and eternal life beyond."

As I passed on down the walk with the thought in mind, I began trying to recall where it was that Jesus gave us this promise; and I found it in the 19th chapter of Matthew. Before I quote it I wish to say to you that one of my besetting sins in my early life was exaggeration. I always liked to put things strongly; and when I wanted to make a point, I was very apt to overstate. For years I have been battling against this temptation; and finally I decided that I would make a practice of understating, or, as you might say, bending the bow in the opposite direction, that it might be more likely to remain straight when it was let loose. In fact, I wanted it to bend the other way. It is far better to put the thing too mildly than to get into the habit of being too extravagant. You may be sure I felt glad, therefore, when I turned to the 29th verse, and read, "And every one that hath forsaken houses or brethren or sisters or father or mother or wife or children or lands, for my name's sake, shall receive a *hundredfold*, and shall inherit everlasting life."

Now, friends, let us stop a little to consider these wonderful words and this wonderful promise to all who give up or forego the things of this world for the good of others or for the sake of Christ Jesus; and let me say, that, to my mind, the great distinguishing feature between those who accept the gospel and those who do not is this matter of self-denial. The Christian *must* deny himself, or he can not be a Christian.* The man of the world need not deny himself at all, unless it be for the looks of the thing, or for the sake of decency. Since I have tried to answer some of the questions from skeptics, a great many letters have come in—more, I am sure, than it will be possible or well for me to try to answer personally. But this very matter now before us should answer all who are really seeking the truth. The Christian constantly puts aside selfish feelings and selfish motives. He gives up for the sake of others, or for Christ's sake, as we sometimes term it. And, by the way, the whole world is clamoring for men who can be depended upon to *deny themselves*, as in the language of our text. The whole business world is demanding men who can not be bought, nor bribed by appeals to their selfish feelings and passions. The perpetuity of our American republic depends upon finding men who are *ready* to deny themselves. If Christianity does not furnish any more self-denial and self-sacrifice than infidelity (or, if you choose, those who neither accept nor reject the Christian religion), then we may as well give it up. By their fruits ye shall know them. If you, my friend, want to employ a man, and want a man who will do his duty whether you are looking at him or not, do not the Christian people among your acquaintances average better than the others? Now, mind you, I do not mean simply *church-members*. If I wanted a good man for an important place, and wanted somebody I could trust when I was not in sight at all, I should, other things being equal, greatly prefer a man who attends church regularly, and one who takes some part in the Sunday-school, weekly prayer-meetings, etc. I should feel sure that such a one would deny himself when the temptation to shirk or cheat, or even to be selfish, came up before him.

Let us now go back a little and see if we can not find something new in that 19th chapter of Matthew. About the middle of it we are told that a person came to Jesus, saying, "Good master, what good thing shall I do that I may have eternal life?" You know what the reply was. You know, also, that Jesus told him finally to "go and sell that thou hast, and give to the poor, and thou shalt have treasure in heaven, and come and follow me." The disciples were standing near during this terrible test; and when this model young man went away sorrowful, because that final test would sweep away all at once his great possessions, the disciples marveled. Then the Master told them that a rich man could hardly enter the kingdom of heaven. In fact, he said it was easier for a camel to go through the eye of a needle than for a rich man to enter the kingdom of God. I know there have been many explanations in our day to do away with the camel and the needle's eye; but I prefer to take the Scriptures just as they read. May be it is because of my old love of strong statements; but it does not matter very particularly. The thought seems to be that, no matter how rich a man may have been in this world, his riches certainly will not be any passport, or give him any privileges in the world to come. No wonder his disciples were "exceedingly amazed," and said among themselves, "Who, then, can be saved?" Peter, however, had another idea in his head. He interposes, as he often did, and says, "Behold, *we* have forsaken all and followed thee. What shall we have therefore?" Peter was right. They had left home and friends, houses and lands, their boats and fishing-tackle; they had given up position and employment; they had left worldly occupation, and, in short, the great busy world itself. They *were following* Jesus, and proposed to follow him, no matter where he led; and Peter's question was not so very much different from the one propounded in our own home—"What shall we have, or what shall we gain, by giving up or foregoing every thing that is even questionable?" The Master answers, and says to them who have followed him, and proposed to follow him, that "every one that hath forsaken houses or brethren," etc., "for my name's sake, shall receive a hundredfold, and shall inherit everlasting life." In Luke we read, "Verily I say unto you, there is no man that hath left house or parents or brethren or wife or children, for the kingdom of God's sake, who shall not receive manifold more in this present time, and in the world to come life everlasting."

Now, these poor simple followers were, like ourselves, prone to get enthusiastic, and full of a certain kind of patriotism. Peter especially was almost always ready to declare he would give his life; and at one time he seemed quite determined to sacrifice his life needlessly. In order to correct this tendency, and to make these poor friends of his comprehend something of what his followers *might* be called upon to endure, he commenced to tell them, with a vein of sadness, we may suppose, of what the future was to bring forth. He says, "Behold, we go up to Jerusalem, and all the things that are written by the prophets concerning the Son of man shall be accomplished. For he shall be delivered unto the gentiles, and shall be mocked, and spitefully entreated, and spit upon; and they shall scourge him, and put him to death, and the third day he shall rise again." Luke tells us, however, that they understood none of these things. We know that at least some of them had their minds occupied with something else. Jesus had commended them; in fact, he had paid them a wonderful compliment by admitting that they, these chosen few, had indeed *left all* and followed him; but even in spite of his reminding, in spite of his admonitions, a foolish and selfish ambition came in right here. As soon as they got by themselves a dispute commenced; and the Master was finally obliged to interpose. Do you remember what they were disputing about? Why, these very friends of his—in fact, the two that seemed to be specially spiritual-minded — one of them was even the "beloved disciple," were contending about who should have the best places. When this great event should come about, when they should indeed be appointed to judge the twelve tribes of Israel, Peter and John put in for the places nearest the Master, one on the right hand and one on the left. As we contemplate these things, and it brings a feeling of sadness over us, there is at the same time something encouraging. Even St. James and St. John, as we are wont to term them, were human, like ourselves—so exceedingly human that, when he tried to tell them of his approaching fate, their heads were so filled with foolish and ambitious schemes that they did not even hear it. Those who are inclined

* How much intemperance would there be in our land if all mankind would come up to the standard of our text, or even a *little way* toward it? The man who is accustomed, day by day, to deny himself and to keep down all these low appetites and passions, will never be in any danger of giving way to the appetite for drink.

to criticise Christians should remember this: That even the best of us, with all our best intentions to be self-sacrificing, and to be meek and humble followers of Christ Jesus, are often, almost unconsciously, exceedingly selfish.

Now, dear friends, the Bible is ringing with texts along this line of self-sacrifice; and there is not a greater truth in this whole wide world than that the man who is constantly seeking self-gratification will utterly fail in that which he seeks after. "Whosoever shall seek to save his life shall lose it." And, again, the one who decides to deny himself, and to put down every selfish feeling, just as soon as it puts in an appearance, shall, almost unconsciously, find the truest and straightest path to real happiness. "And whosoever shall lose his life shall preserve it." Why, I am sure, dear friends, that you have all had experiences along in this very line. You have again and again decided (perhaps with a sigh) that it was best for you to give up something you very much wanted; yet you decided that, for the sake of *peace* and *good will*, you would say nothing, and bear the cross; and, to your great astonishment, you discovered very soon afterward, that, in giving up and in putting aside self, you found a great *blessing*. Does not our text express it beautifully? "Let him deny himself, and take up his cross daily." And then, again, in the verse beyond, "But whosoever will *lose* his life for *my sake*, the same shall save it."

NOTES OF TRAVEL.

ON THE WHEEL—CONTINUED.

After looking at the spirea we pushed on through the evergreens, and my eye at first caught on to the strawberries; but it was not long before I uttered another exclamation of surprise as I saw the most luxuriant growth of clover I think I ever set my eyes on before. It was so thick and strong that it fairly rolled over on to the cultivated ground. I turned to look at friend Terry, and he smiled as he replied, "There, Mr. Root, that is what I wanted you to look at when I sent you that urgent invitation. I thought I would let you alone until you ran on to it yourself."

At this I raised my eyes and looked over the green field. Then I turned my face to the right and to the left as I replied, "Why, your clover is not *all* like that *all over*, is it? Is not this a piece where you put on so much manure to get something extra for your strawberries, two or three years ago?"

"Well, you shall be the judge," said he.

Then we went all around the clover-field and examined it. It was almost too wet from the recent rain to wade into it very much. Several times I thought I saw a place where it was not as tall, and so I *did* wade out in to see. But Terry's thinking and working had got it almost perfect. It was an even stand from one side of the field to the other, just as regular as if it were a piece of mechanical work. There were no poor spots, and no extra good spots,* and at that time it had not got down anywhere. Within the past few weeks I have been having some experience with what can be done, not only with potatoes, but average garden crops, on a clover sod. We have been having the worst drouth that has visited us for many years. But every thing on the clover sod is walking right along, keeping up its color, and making a strong thrifty growth. To-day is the 10th of July; but since the 1st day of June we have not had enough rain altogether to make an ordinary shower, while the mercury has at times been in the 90's. Now, I do not know what the result would be of turning under such a growth of clover as I saw that day; but from what experience I have had, I think it must be something immense. I questioned a little, and friend Terry admitted that the crop promised to be so great as to fill all his barns—may be more too.

Before leaving home I had been worried because of the quantity of docks that were coming up in my potato-field. Old farmers shook their heads, and said I would have to dig them out, root and branch. Now, there were so many that that meant considerable hard work. I did not know how docks could have come on my ground to that extent. But I concluded it must have been in the clover seed, and that, when we turned the clover under, the docks grew up "t'other end to." I have spent some money in digging out docks, and I have had some experience, as you may remember, in killing out Canada thistles; and when some of my men asked whether they should dig out the docks, I told them to wait a little until I found out more about it. In fact, I proposed to write to friend Terry and ask him to tell me on a postal card whether such cultivation as we give potatoes would not kill out even docks as it did Canada thistles. Well, when I looked over his potato-fields where the potatoes were just getting through the ground, I almost "chuckled" as I saw the docks scattered here and there, just as they were in my own field. But I was not very much surprised either, when friend Terry said they would not do any particular hurt. He has told how careful he is about having no foul seeds in his wheat when he sows it, and therefore I rather expected he would be equally careful about his clover seed—especially clover seed without any dock seed in it; but I was not very much surprised when he said that dock seed in with the clover does so little harm that it is hardly worth while to make a fuss about it.

Of course, he would not have a dock going to seed on his premises, any more than I would; but running the cultivators as he does every few days right over the docks soon uses them up, and I found it so in my case. There is not a dock to be seen now in my potato-field, and I hardly understand it either, so little attention was paid to them. The few left in or between the hills, were, just once, cut out with a hoe.

Now, here a point comes in. A great many hard-working farmers waste their time in severe hard labor, in doing work that does not need to be done—in fact, oftentimes even worse. At this very time, right in the midst of a July drouth, people all over our town are hilling up their potatoes. Several have wanted to borrow my shovel-plow or any other implement that would just pile the dirt away up sharp around the potatoes, leaving the deep V-shaped furrows between the rows. I have attempted a little remonstrance but it is not a bit of use. When I quote Terry, they say, "If Mr. Terry says that potatoes should not be hilled up so as to prevent the hot sun from making them green, we don't want any more of Terry." If I had nothing else to do I might sit down patiently with each one and attempt to explain matters. It is no use to attempt to get them to read his book, for they have not time, or they think they know best any way. A few years ago I had a very promising piece of Early Ohio potatoes. They were doing as nicely as potatoes could well do until one day, during my absence, one of my German helpers, who felt sure it ought to be done, hilled up the whole

* Not even where this ground had been manured so heavily for strawberries.

patch until they looked about like celery-rows fixed up for bleaching. We might have done it a great deal quicker with the Planet cultivator and horse, but I presume he fairly ached to get at it with his hoe, and do it up in the old-country style. He worked hard and did an honest job; but the potatoes wilted down right away, and there was not nearly half a crop. Now, mind you, there is a good deal to be explained about this matter of raising potatoes on the level culture. If you plant in the old-fashioned way, with a dozen big stalks in a hill, they will burst the ground open so something has to be done. If, however, you have only one good stalk in a place, and these good stalks just about the right distance apart, you will get just as many potatoes, or more, and have them nearly all of a marketable size, and not have them sunburnt either.

Since the big ditch has taken the surplus water away, friend Terry has been doing some more underdraining, and, like the rest of us, he is having some puzzling problems to work out. While looking at the water as it was running away from the black mucky swamp ground, I began to feel thirsty. When riding the wheel at the rate of thirty or forty miles a day one wants a good drink every hour or two. When I asked if there were not some springs somewhere that furnished nice drinking-water, my friend said at once, "Oh, yes! come this way." At the foot of a gravelly hill a bubbling spring burst forth, and on the brink was a glass fruit-jar used as a drinking-cup. Was any thing ever before so grateful and delicious as the water from that jar? I did not drink a whole quart, but it seems to me I came pretty near it; and it just made me feel clean and bright and strong. Now, there is one thing that I like when I go to friend Terry's. If I want to rush off in an hour or two, just as I enjoy rushing around through the world, I am perfectly free to do so. I told him I wanted the privilege of coming quite often, and therefore I proposed to make my visits short; and after having some more of those canned Sterling strawberries, with that beautiful nice bread that Mrs. Terry knows so well how to make—hold on! it may be that the bread was made by one or both of those bright and accomplished daughters who make themselves useful in so many ways around that pleasant home. How I did enjoy my wheel again after the roads had dried so as to be firm for rubber tire! I wanted to visit Matthew Crawford, the great strawberry-grower; and if I were to get off right away, and make things fly, I might reach his place in Cuyahoga Falls before dark.

Oh, yes! there is another thing that I must mention before I bid good-by to the Terry homestead. Let me digress a little first. I suppose that, for the present, it is wisdom to keep our barns and out-buildings locked up. Why, within only a few days back, even here in our moral town of Medina, there has been a great deal of chicken-thieving. One of our neighbors, who hatches chickens successfully with an incubator, has had toward a hundred choice chickens, of valuable high-priced breeds, taken from his yards. Only last night a couple of dozen of his choice pullets were carried away. At present, locks and keys seem to be the only alternative. May be locks and keys do not bother you at your home, but they are a fearful nuisance here at our place. The warehouse will be locked up, and one of the men will have the key with him in his pocket. The one who has the key will, may be, stay away half a day (to hill up his potatoes, or something of that sort), and nobody can get into the warehouse. Three or four expensive men will be standing around the door, meditating what to do. Sometimes they get an ax and break the lock; and the consequence is, that, when the warehouse should be locked up, it is not locked at all; and when it ought to be open it is locked up, and the key lost or gone. I have sometimes said that I would about as soon have my possessions stolen every once in a while as to have such fearful bungling and losses of time with locks and keys. Well, Mr. Terry has met this same problem and solved it. He finds it policy to lock his barn and tool-house; but instead of a lock with a key he has a combination lock that costs about a dollar. All the family, and even the hired man, understand the combination. You just take hold of the knob and turn it, say, three notches one way, one back, and two ahead, and the door is open; and one who is accustomed to it will open the door as quick as with any latch. But to a stranger it is perhaps the most secure lock that can be devised, and yet the price is only about a dollar.

I shall have to tell you about my pleasant visit at friend Crawford's in my next.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

GARDENING IN THE SHADE, ETC.

When I had the mania for sub-irrigation, on friend Cole's plan, several years ago, I spent considerable money in making reservoirs of stone, covered with earth; and the earth covering was made of mixed soil and manure for two or three feet. The development of our business, however, necessitated putting a new machine-shop right where this garden stood; and the consequence is, my nice beds that cost so much money are in the *shade* the greater part of the day. Some of them, in fact, almost never see the sunshine. Some way I could hardly bring myself to the idea of taking the earth out of those beds, and giving up what cost so much money. By a little experimenting I found that celery would do just as well, or a little better, in the shade; therefore this whole series of plant-beds is now devoted to celery-raising. A couple of hydrants furnish abundance of water, so that the little plants may be kept constantly wet until the roots get down so deep that they don't mind the drouth. Well, this ground, after having great quantities of manure applied to it year after year, has finally become the richest and nicest soil I ever saw for *any* thing. Some of the beds that I have had in use longest seem almost perfection in the way of soil. This reminds me that, when I asked friend Smith, of Green Bay, Wis., if his land got worn out with such constant cropping, he replied, "Why, nothing of that sort; in fact, it is just the other way. Here! come and look at the first acre of ground that I ever owned." Well, the soil on that one acre looked and acted a good deal like the rich loam in my first plant-beds. Besides the stable manure that has been put on, I drew many loads of muck from the swamp, and I have also put on quite a little sand with bonedust, more or less, at different times. Well, when we were crowded for a certain kind of celery we transplanted into this particular bed. I can not tell how long it takes for the seedlings to get large enough to ship; but it seems to me only just a few days. Then the bed is worked over, smoothed down, and another lot of plants go in, and they in turn take hold of the black earth so vigorously that, almost before we know it, they are ready to go out. This one bed holds about 3000 plants; and even at the lowest 10,000 rates, we get $7.50 for

the plants of the bed every little while. Another thing, it has been weeded so much that not many more weeds come up in it. Still another thing comes in right here: The womenfolks around Medina are, every little while, wanting some of that nice soil to grow their flowers in. I set the price at 25 cts. a bushel; but, I declare, if I should take soil out of that particular bed to fill orders, I fear they would scrape out every bit of it in no time at all; and I do not know how I could replace it right off. Well, every gardener or florist ought to be prepared to sell nice potting-soil. You can get a whole load of stable manure for 50 or 75 cts.—at least, *we* can. Muck from the swamp should not cost more than half as much; and nice sand from the lake shore, perhaps twice as much as the manure. Then you can put in rotted sods, decayed leaves, weeds, dirt, etc. Why, the cost would not be more than five or ten cents a bushel; and who would not pay 25 cts. for something that is just right to grow seeds or start plants? A great variety of refuse might go to make up this nice soil—weeds, refuse, and all sorts of trash from the garden, providing said trash is something that will rot up fine so as to go through the gardener's sieve. If one wants less than a bushel, charge him, say, 10 cts. a peck; and it will be cheaper for almost any one to pay this price for a nice article than to use the average garden soil. The trouble is with us, there is always a greater demand for "nice dirt" than the supply; and this real nice soil does not need so very much watering. It seems to hold the moisture very much better than the average soil. My impression is, that it must take years to make it. I have heard of greenhouse men shoveling out the contents of their beds every year or two. Now, that is not according to my ideas at all. If the soil does really become infected with fungus or insect-enemies, then put it out during a severe freeze, and just freeze them out.

How about the sub-irrigation part of it? Well, it worked beautifully for plants that can get down into the water. Almost every season the Hubbard squashes, melon-vines, or even cucumbers, get a start late along in the season, when the plant-trade is pretty nearly over; and when they once get their roots down, and get down to business, it would remind you of Jonah's gourd, that came up in a night. During our cellar excavations in building, we actually found the roots of a squash-vine down three feet among the wet stones. It was under glass so it could not get any rain; but yet it just grew "amazingly." The water is down so low that a great many plants can never get to it; but when any of them do, their growth is immense.

ANOTHER TOMATO BOOK.

About as soon as we have an industrial book on some special branch of rural industry, another is pretty certain to follow in its wake; and so it should be. One book can not well cover all the departments of even a single industry like tomato-growing. In our own tomato book, neither myself, friend Day, nor friend Cummins had much to say about originating new varieties. Well, this new book on tomato culture is by A. W. Livingston, the man who has given the world more and better varieties of new tomatoes than any other one man living. Livingston gave to the world the Paragon tomato in 1870; in 1875 the Acme, which had a greater run, perhaps, than any other tomato ever known. In fact, it started a new era in tomato culture; and even now friend Day gives the Acme the preference, as a rule, for his great plantation of tomatoes. In 1880 Livingston's Perfection came out, and in 1882 the Golden Queen. In 1883 the same man gave us the Favorite, and in 1886 the Beauty. Who is there who never heard of Livingston's Beauty tomato when it came first before the world? I remember of seeing a boy on the streets, with a basketful in each hand. They were so perfect in shape, color, and smoothness, that I stood still in astonishment. Said I:

"Will you please tell me, my friend, where you got those beautiful tomatoes?"

With quite an indifferent air, as if they were nothing to be surprised at, he replied:

"Why, up there at the grocery."

"How much did you give for a basket of tomatoes like that?"

"Twenty-five cents."

He then stared at me as curiously as I had stared at the tomatoes. At this time I had paid but very little attention to tomatoes, and hardly knew what kinds were in the market. When I found the town was full of these nice ones, and nobody thought strange of it, I began rubbing my eyes. They were Livingston's Beauty. Some years later a man drove up with a load of tomatoes. He wanted to sell me some. I told him it was not any use; that our vines were loaded with beautiful ones, and nobody would give any thing for them. He lifted the cover to his wagon. I offered him 25 cts. a bushel, and he took me up. Said I, "Where on earth did you find a *wagonload* of such beauties?"

"Why, we raised them in the field, of course. *Certainly* they are *beauties*, for we planted the seed of Livingston's Beauty, and nothing else."

We got the whole wagonload, and I saved the seeds and sold *them* to the readers of GLEANINGS for quite a good deal more than I paid for the tomatoes. But, about the book. It is neatly bound in cloth, and contains 172 pages, and quite a good many illustrations. It covers briefly most of the points made in our new tomato book; but there is little or nothing in regard to the cloth-covered cold-frames to make tomato-growing a success in the South. But the great and special point of the book is growing improved varieties. Almost every one would say that Livingston had originated these new varieties by careful selection, perhaps crossing and hybridizing our best varieties. Nothing of the sort. He says he worked something like 15 years in that line, but gave it up in discouragement. He had accomplished little or nothing. He gets lots of new and wonderful varieties by catching hold of *sports*. A large field of some choice variety of tomatoes is planted. He then goes out into the field with his eyes open, full of enthusiasm, with all his faculties on the alert for the thing he is searching for. One is reminded of the ancient sages who were in hot haste to find the philosopher's stone or elixir of life. The only difference is, that our venerable friend has *found* the object which he sought—that is, in scanning such a field as I have described, he found more or less promising plants. Seeds were saved from these plants, and he worked along this line for a tomato that came up to his expectations. When he got hold of the Beauty, one can readily believe that he felt like shouting, if he did not shout, "Eureka!" Experiment stations and others have been for some years looking for a tomato of the family from which we get the pear and plum tomatoes. These never rot—at least, we have never known them to rot. The only trouble is, they are all too small. The King Humbert is of this class, and also the new Peach tomato. They are enormously productive, but have been, heretofore, too small. One of the last achievements of friend Livingston is his large Rose Peach tomato. This, he says, averages about the size of the Acme. The new

Aristocrat I have mentioned is now growing on our own grounds, and has some very handsome green tomatoes on it, about the size of a hen's egg. The price of the book is $1.00, and I think it is abundantly worth that to any one who is at all enthusiastic in developing new fruits and vegetables. The enthusiasm you will likely get from it ought to help you to sell your crop for a good *many* dollars more than you would likely get if you had never seen the book. You can get it of the publisher, A. W. Livingston, Columbus, O., or from this office, at the above price.

"LOW-PRESSURE" GARDENING, ETC.

Friend Root:—Will you allow me to have a say in that "High-Pressure" gardening, and tell the readers what can be done under a *lower* "head of steam" than you carry at the Home of the Honey-bees? First, I wish to tell you that we got the most of the seeds we planted this year of A. I. Root. I will commence with lettuce. The Grand Rapids we have been using almost every day since along in April, the first mess or two coming out of the hot-bed.

Beckert's Chartier and Early Scarlet Globe radishes we have been using for the same length of time.

Eclipse beets we have been using for some three or four weeks past; have just weighed one that draws 1 lb. 7 oz.

Purple-top White Globe turnips we have been using freely for some time past, in spite of hail, frost, and snow that they had to contend with in their infancy. If you think that early turnips are not good, just plant a small patch next March and try them. Lulu (that's my better half) says we must never be without early turnips in the spring, hereafter.

I let a few heads of the Grand Rapids lettuce stand for seed; but they seem to have been trained not to go to seed for so many generations past that they have almost forgotten how to make seed.

All that is claimed for the Select Very Early Jersey Wakefield cabbage has proven true here. In spite of repeated hailstorms, with hailstones an inch and over in diameter, cold north winds to whip them around, and one or two heavy frosts along with cool, rainy, and even cold weather, we have been using nice solid heads for about two weeks past, and have some to sell or give away. We have just weighed one that counts 3 lbs.—not an extra-large head of cabbage, but I think it does very well for early.

Talk about peas! I always thought one had to plant a big lot of seed to get a few peas; but I have changed my mind this year. American Wonder, A. I.'s catalogue says, grow 6 to 8 inches tall, so I gave them no bush to climb on, and they just sprawled out all over the ground some 18 to 24 inches; but nevertheless they gave us plenty of nice peas. But, oh my! those Stratagems! Many of the stalks were thicker than a leadpencil, and taller than the stakes I gave them—some 3 feet. I have just made the third picking; and, *such* peas! pods 4 inches long and over, with 7 to 9 and sometimes 10 large plump peas in a pod. They are equal to any picture you ever saw in a seed catalogue.

Prizetaker onions, started from seed in the hot-bed, are now (some of them) as large as an egg, and they are just now beginning to swell.

Potato onions, large ones planted in March, have made fine hills, some hills having 7 to 8 large and small onions. We have been using them for some time, and are now about ready to harvest.

New potatoes we have been using for over a week. Early, six weeks, planted according to Terry, have single hills giving 1 lb. 13 oz. of tubers, single tubers weighing 10 oz., and the stocks are still quite green, and show no signs of ripening.

Beans, kidney wax, are about half grown; can use them soon. Jersey limas are near the top of the poles; Kumerle bush limas did not come up very regularly, but I have a fair stand, and they promise well.

Tomatoes, largest, 3 inches in diameter. I expect to have ripe ones July 4.

I got only a dozen pepper-plants out of a package of seed of the sweet Spanish; but they are doing well, and are now in bloom.

Of the Excelsior Flat Dutch cabbage seed, I sowed about what I thought was right for our own use, and had plants to sell and give away by the hundred, and have some 300 doing well.

I could write much more, but am afraid I might crowd A. I. R. out of his garden, and cause him to ride off on his wheel. This garden is part of a run-down neglected hillside farm that was too poor to grow grain. The garden, however, was lucky in being situated just above an old rail fence that caught much of the good soil washed down from further up the hill. In the spring of 1892 it was sown to oats and alsike clover. Most of the oats in the garden plot lodged, and the chickens were allowed to clean it up. Some stable manure, henhouse cleanings, ashes, and some old plaster from the house we renovated, along with other similar articles, were applied along in the winter. Some folks were in doubt about having a good garden on this old hillside; but I think I can show the finest garden for some miles around. Father (S. Miller) is a professional horticulturist and gardener, but I can lay it all over his garden. Asparagus, strawberries, and the like will come in next season, as I got them planted only this spring, having moved to this farm last August.

My hot-bed consists of a pile of manure, some cornstalks and straw, a frame of some old boards set on this, and some good earth sifted or raked fine in this, and two hot-bed sash 3x6 that cost about $5.00 or less delivered. If you wan' a good *early* garden you must have the hot-bed.

Now, friends, I have not written this to boast of what I have done, but to give you a hint of what you *can* do if you will. I should like to say a few words about the Planet Jr. double-wheel hoe, and its weed-killing capacity; but if A. I. Root finds room for all the "garden sass" I have already given it will surprise me. S. E. MILLER.

Bluffton, Mo., June 26.

[Very good, friend M. Some of the rest of us have found that the American Wonder peas, for this year, grow a little more than six or eight inches. I do not know whether it is the extra soil up in Michigan where they are raised, or whether they have got tired of being dwarfs, and have gone back to old times, or what is the matter. Nobody has complained, that I know of, because they give a very large crop of extra nice peas, even if they do go over more ground than the orthodox ones ought to do.]

If my subscription expired, my desire for GLEANINGS has not. I drop almost every thing when it arrives, for I consider it one of the greatest boons the apiarist can find, and can not be dispensed with conveniently. I for one could not do without it.

De Kalb, Ill. A. Y. BALDWIN.

Markley's parody on the "Old Oaken Bucket," page 484, is the best reading that I have found for a very long time, except "Ourselves and our Neighbors," on page 439. Many thanks, my dear sir; and may God bless and prosper you, not only in basket and in store, but in all that you wish.

Syracuse, Kan., June 21. JAMES H. WING.

TRADE NOTES.

NUMBER OF SECTIONS MADE BY THE G. B. LEWIS CO.

WE are surprised to learn that the G. B. Lewis Co., of Watertown, Wis., manufacture annually from ten to twelve millions of sections; but during the last year, 1892, the sales, so we have been informed, were not quite so large. This is probably a much greater number of sections than is manufactured by any other manufacturer of bee-keepers' supplies. As the company in question have not advertised so very extensively, this large sale is doubtless due to the fine and uniform quality of the sections they make; in fact, we get pretty good reports of all the goods sent out by the G. B. Lewis Co.

TOMLINSON'S CLOSED-END-FRAME HIVE.

After describing Aikin Brothers & Knight's new hive, with the closed-end frames, we received letters from various sources, criticising the hive, some saying that it was made of too many pieces, etc. Among them the following is a letter received from Julius Tomlinson:

Friend Root:—

I read with interest your description of Knight's non-swarming hive. It may be a good hive, and the non-swarming principle all right; but it is too complicated, and the non-swarming feature not so simple as Langdon's. The closed-end brood-frames are a good thing; but the way of compression of the same is not nearly as simple as in my hive, as you may see if you will take the trouble to read my little book which I inclose. Bees and honey are too cheap to warrant complicated and expensive hives. Heddon once said, in our Michigan convention, that, if he were to start anew in the bee-business, he would take the old box hive, and I am not sure but he was about right.

JULIUS TOMLINSON.

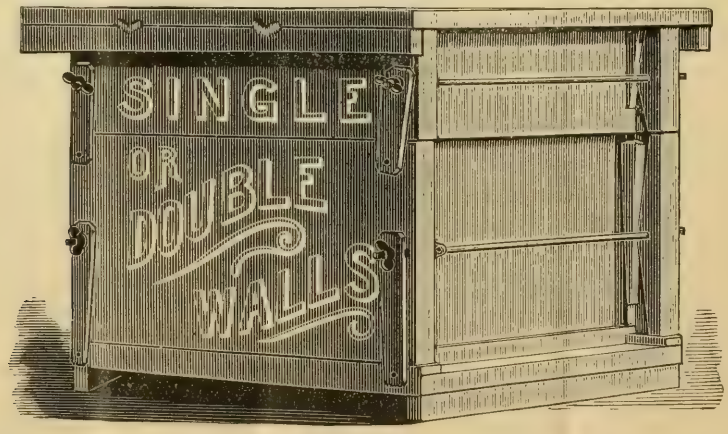
Allegan, Mich., June 7.

Accompanying this letter was a booklet describing his Ideal hive, with closed-end frames. As it was made on somewhat the same plan as Aikin Brothers & Knight's hive, we concluded that a brief description of it might be interesting—the more so, as attention is now being directed toward a feasible plan whereby closed-end frames may be used successfully without the inconvenience of the old methods. Mr. Tomlinson uses a long bolt, with thumb-nuts as a means of compression, on closed-end frames; but his manner of producing compression laterally is slightly different. Instead of having a bridge-shaped cleat nailed across the end-board, he has loose wedges that he crowds down between the end cleat of the side-board and the end cleat of the end-board. The engraving below will make it plain.

A peculiarity is, that the *ends* of the frames come in contact with the side-boards that are squeezed up by the thumb-nuts and rods, and the lateral compression or pressure against the sides of the frames is effected by the wedges. Usually in such arrangements the thumb-nuts and rods compress the frames laterally; and it seems to us that, as the rods afford the more powerful compression, their pressure should be applied to squeeze the frames together.

The frames are the ordinary closed ends; but a top and bottom bar ⅞ inch square is nailed to the ends so that one sharp edge or corner is up, *a la* Bingham. To contract the brood-nest, one or more frames are removed and the end-board is shoved up against the frames left in the hives. It is then, says friend Tomlinson, fastened with a wedge, and the thumb-nuts are drawn up. Just how this end-board may be wedged up, or, rather, what the wedge may crowd against, friend T. does not describe.

The cover is made of three boards, the two cracks being fitted together with a couple of V-shaped tin gutters. We do not regard this method of making covers of two or three pieces as entirely practical, and we think that friend T. will discover, sooner or later, that his covers leak badly. The bottom-board is made long enough and wide enough to reach out to the outer edges of the hive, and is cleated at each end to prevent warping. Upon the upper side and on the outer side edges are nailed two cleats ⅜ thick and 1¼ inches wide. This raises the hive-body up a bee-space from the bottom-board, and leaves an inner projecting support for the ends of the brood-frames.



The super is made on the same plan as the brood-chamber, and contains a series of single-tier wide frames. These, Mr. T. says, secure cleaner sections, and he prefers them to the section-holder, or topless wide frame.

We do not quite understand why friend T. prefers to have the most powerful compression—that by means of rods and thumb-nuts—applied upon the *ends* of the closed-end frames rather than upon the *sides*. Possibly there are some advantages in this, and if so friend Tomlinson will enlighten us.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.
ILLUSTRATED SEMI-MONTHLY
36 PAGES 7×10
$1.00 PER YEAR.

The Son of man came not to be ministered unto, but to minister, and to give his life a ransom for many.—MATT. 20: 28.

WE regret to learn that the *Canadian Bee Journal* office was entirely burned out some days ago.

SINCE the article of R. F. Holtermann, in regard to self-hivers, went to press we have received a letter from him, to the effect that his self-hiver is a perfect success.

WE are still putting in foundation by using an electric current from three bichromate-of-potash batteries to heat the wires. The plan has proven to be a grand success. The work when done is not only many times nicer but decidedly cheaper; and no bee-keeper or supply-dealer who has any considerable number of sheets of foundation to put in wired frames should think of fussing with the tracing-wheel or any other mechanical device to crowd the wires, when cold, into the sheets of wax. The spur wire-imbedders, in order to press the cold wire into the foundation, mash the cells somewhat out of shape; and, besides, make unsightly teeth-marks at regular intervals along the track of the wire.

PERHAPS some of our readers are anxious to know how we are coming out in our experiments in uncapping combs by means of wires heated by electricity. J. S. Reese, of Winchester, Ky., who has been experimenting along this line, has rather given it up as a failure. Our experiments so far have been both a failure and a success; but there has been enough of the latter to cause us to still have hope. Five cells of bichromate-of-potash batteries connected in series will produce the requisite current. These cells can be made at home, not counting the time (by using common well-glazed crocks instead of glass), at a cost of about 25 cents apiece. The cost of maintenance per day for the five cells would be about 25 cents, so the expense is merely nominal; and the only point to be proven is, whether the heated wire can be made to do the work satisfactorily and with reasonable speed. Perhaps some of you may want to know what bichromate-of-potash batteries are. A full description is given on page 412 of this journal for 1892, together with full details how to make up the batteries so as to heat the wires for imbedding them into foundation.

THE AMOUNT OF COMB AND EXTRACTED HONEY PRODUCED ANNUALLY: A NEW METHOD OF FIGURING IT OUT.

IN Trade Notes, mention is made of the fact that the G. B. Lewis Co. turn out annually from ten to twelve million sections. Would it not be interesting to know the number of sections that were made during any one year by all the section-makers? It is too early yet to get any figures for 1893; but the number of sections made during any particular year, if *all* the manufacturers reported correctly, would give us *some idea* of the amount of comb honey produced that year in the United States; but we should of course have to deduct a certain per cent for sections that would have been left over, and sections partly filled. Having done that, we could estimate pretty accurately the amount of comb honey produced in this country in a single year. We will agree to report accurately, at the end of the season, the number of sections we have manufactured. Now, if the G. B. Lewis Co., the W. T. Falconer Co., the Leahy Manufacturing Co., and a host of smaller manufacturers would report, we could tell at the end of the year something near the amount of comb honey produced. Can we not secure your co-operation in collecting these valuable statistics? It is a disgrace to our industry that we are not able to give any thing better than guesswork figures for the annual comb-honey product of the United States.

Suppose we do a little guesswork, or a little rough estimating. If the G. B. Lewis Co. made in 1892 ten million sections, and that during a poor year, they made at least a third of the sections produced in the United States. Therefore during the poor year of 1892 there was produced from 25 to 30 million pounds of comb honey. This would represent an aggregate of 12,000 to 15,000 tons. In a good year this amount would be nearly doubled; or, putting it moderately, 50 million pounds. As there would surely be as much extracted honey produced—probably more—the annual product in a fair season would aggregate, of both comb and extracted, 100 million pounds, or 50,000 tons. This would be, however, only about 22 ounces for every inhabitant of the United States; and as vast amounts of extracted honey are used in the bakeries, and for mechanical purposes, we see that our estimate as above is certainly moderate.

JOHNSON'S CYCLOPEDIA.

WHEN this great work first appeared in 1874 it was immediately accorded a place in the front ranks of its competitors; but it has been so much improved and enlarged since then that the first editor would hardly recognize it. Even while we have had in mind the other superb cyclopedic works with which English-speaking people are blessed, we have never hesitated to advise inquiring friends to get Johnson's, although we have used another one, printed before the work in question was out. It is difficult to give an adequate idea of this work, of which the first volume is before us. It includes all subjects lettered from *A* to *Calculus*. We made a guess at the number of pages in it, and put it at 480. If we had said 880 we should have been just right. The size of the print is exactly that of the letters on this page. The print measures 9 x 6 inches. The paper is of the very best, and has no shine on the surface, so the print is perfectly plain, no matter how the book is held in relation to the light. The latter objection has been urged against the super-calendered paper used by most of our illustrated magazines. The cuts are numerous, and first-class in every respect. So far as the work of the printer, pressman, and proof-reader is concerned, we would say, as printers, that at present the world has nothing better to offer. So far as the editorial work is concerned, every department is in charge of a literary star of the first magnitude, thus making the work a concentration of human talent not often found. This cyclopedia is perfectly adapted to the wants of the plainest person who ever uses such works at all, and yet exhaustive enough on great matters to take the place of most text-books; or, at least, if the matter is not sufficiently treated in this work, a good text-book should be used. The other extreme, of filling up the pages with a list of every town in the United States, which can be found revised in any postal guide every three months, has been avoided. In the volume before us we find important discoveries mentioned, made in 1892, and one date is mentioned as late as Feb. 20 of

this present year. The maps are all new, and beautifully colored. We believe that every subject treated is considered in a perfectly impartial light; and while not trying to make the inventions of other nations look pale by causing them to appear in any stronger light which the editors assume by right belongs to us, we Americans have reason to be well satisfied with Johnson. We say this in view of the feeling of disappointment one sometimes feels when consulting some foreign cyclopedias for information concerning matters of particular interest to us as Americans. The entire work, in the new form, will contain eight volumes. We can commend it most cordially to our readers.

This is not a paid advertisement, but a free and unsolicited expression of our opinion. The work is truthful on the subject of bees, and that is why we like to say a good word for it.

1893 A PHENOMENAL HONEY YEAR SO FAR.

NEVER, since we have had charge of the editorial management of GLEANINGS so far as it relates to bees, have we read so many reports showing phenomenal honey-flows. Why, if you could look over our shoulder as the letters come in day by day, you would think that a veritable and prolonged honey-shower had struck the country; and the end is not yet. The season with us commenced about three weeks ago, and the bees are still working on clover, and basswood is just beginning to open up. This state of affairs seems to be existing in nearly all of the Northern and Middle States, from ocean to ocean. Yes, the California crop is going to be good too. More than all this, the crop, besides being unusually large, is remarkably choice. All samples that have been coming in were of about one grade—extra nice; and the producers, almost with one accord, write that they have tons and tons of that kind of honey.

In our department of Reports Encouraging, in this issue, we have given just a few of the fair average reports, not selecting the best nor the poorest. The few that we have published represent hundreds of others that we can not insert in our columns on account of a lack of space.

Now, it may be that there are some localities where the bees have not done well; but if so, they are very few and far between. We have had so far, in the past three or four weeks, only one isolated report, and that told the old story of the last four or five years—no honey, and the bee-keeper discouraged.

BEING IN HASTE TO THINK EVIL OF OUR NEIGHBORS; SUGAR HONEY, AGAIN.

I FELT sure that, before another honey season was over, we should feel the effects of what was said a few months ago about feeding bees sugar to make honey. A good friend of mine just brought in some honey for us to buy. I objected to paying a good price for it, as it was stored in stained and propolized sections, saved over from last year. Then he commenced:

"Mr. Root, *this* is genuine honey. The honey you are buying and paying a big price for is made by feeding sugar; and three-fourths of the honey brought into market in Medina Co. is sugar honey; but you *know* mine is just what I claim it to be—genuine honey."

As soon as I could stop him I put in something like this:

"Why, friend C., you are beside yourself. How can anybody afford to buy sugar and feed it to his bees when honey is coming in right straight along, as it has been for a month back? How can these men who, you say, buy sugar and feed it, compete at all with those who simply fix their hives and sections, and take care of the honey that comes of itself, as free as the air we breathe?"

If there had not been a good flow of honey, I should not have been so much surprised; but to hear an intelligent man claim that the nice honey that is now pouring in upon our markets was made from *sugar* was astounding. But he was not done yet. Said he:

"You can not get around it. A greater part of the honey upon the markets is made of sugar. I saw it so stated in the *Ohio Farmer* a short time ago. One of your best writers said that the small bee-keepers could in nowise compete with the specialist who makes it his business to raise honey and do nothing else. That means that the specialist feeds sugar to get his honey."

This is the consequence, you see, of having this thing get into the papers. Then he started on a new track:

"Look here. This honey of mine is ever so much *better* than your nice-looking white stuff. One of our grocers uptown tasted of one and then of the other, and he said they were nothing near alike. He said mine was ever so much better because it is *pure honey*, and the other is just sugar syrup put into combs. Why, Mr. Root, you just taste one and then the other yourself, and see the difference."

I admitted to him that there was no doubt a great difference. One lot probably came from basswood and the other from clover; and on tasting one and then the other, no one could fail to notice the remarkable difference in flavor. But some will prefer the basswood and some will prefer the clover. The difference in flavor does by no means establish the fact that one is sugar and the other is honey. Now, then, let us go back to the strong point of our defense. How can any bee-keeper buy sugar, and fuss with feeders, and produce a crop anywhere near as cheap as he who takes the honey as it comes, costing him nothing except to provide places for the bees to store it? Some, perhaps, will *admit* that the thing is impracticable and impossible during a honey-flow; but how about the fall of the year, when no honey is being gathered? Well, I do not believe that any bee-keeper will make it pay sufficiently, to follow up the business, even in the fall of the year, notwithstanding the wide difference between the price of sugar and that of dark honey; and I should be very much surprised indeed if a *single pound* of sugar honey could be found in our whole county. A. I. R.

The following, just at hand, will explain itself:

Friend Root:—I am so anxious to hear something about how the Langdon non-swarming device worked with other people. From my experience, I have to consider it a complete failure, to my great sorrow and disappointment. T. H. KLOER.
Terre Haute, Ind.

Yes, so should we; let's have the reports of those who have tried them for '93, including one from H. P. Langdon himself. Just now we are all anxious to know about something that promised so much early in the season. We are hopeful.

The Crane has the best blast of any smoker I have seen. T. K. MASSIE.
Tophet, W. Va., June 26.

I am happy to say that we have found GLEANINGS a "good investment," and it is with the greatest pleasure that I now inclose a dollar to renew my subscription for another year. Long live GLEANINGS and all its managers!
Troy, N. Y., June 26. LEVI DE FREEST.

SPECIAL NOTICES.

SHIPPING-CASES.

We are prepared to furnish promptly, and at best prices, choice clean basswood shipping-cases for comb honey. See p. 30 of our catalogue for description and price list.

SECTION CARTONS.

We have a good stock of cartons, for 4¼x1⅞ sections, that we can furnish promptly at the prices given in our advertising columns elsewhere; and notice we have them without tape handles at $1.00 per 1000 less than those prices. Special prices in large quantities.

STANLEY HONEY-EXTRACTOR.

Of the old stock of Stanley extractors we still have one two-frame, with gear, at $11.00; one four-frame with gear, $15.00, and three four-frame without gear, at $12.00. We can add a gear to any of the latter at $3.00 extra if necessary. We shall have no more cheap Stanley extractors when these are gone, so that, if you want to secure one, order quick. These prices are less than two-thirds of regular price.

SHIPPING-CASE GLASS.

We have an extra large supply of 2x9 shipping-case glass, 400 lights to a box. We sell this regularly at $2.50 per box; and if it had to be cut from whole stock it could not be furnished at this price. To reduce stock we will sell for $2.25 per box; 5 boxes, $11.00; 10 boxes, $20.00. We have also quite a little 2x18, which we offer at $2.40 per box of 200 lights, and the same reduction for larger quantity as on 2x9.

EXPERT COLUMBIA ORDINARY BICYCLE FOR $30.00.

These are the days of safety bicycles, those having both wheels 24 to 30 inches in diameter, and the old-style high or ordinary wheels are not in great demand. There are some who still ride the old ordinary, especially if they can get a $150 wheel for $30.00. One of our helpers has a 54-inch Expert Columbia, which in its day was considered the best wheel of its class. It is in good repair, and will be furnished in first-class running order, securely crated, on board cars here, for $30.00—a rare bargain for any one in want of such a wheel.

LABEL AND RUBBER-STAMP CATALOGUE.

We have finally completed a new supply of job-printing and label catalogues which give samples of different styles of honey-labels in several colors, and a list of prices. We are also putting in a 12-page supplement of rubber stamps, so that our label and rubber-stamp catalogues are now combined in one, and will be mailed free on request to all applicants. This gives prices also for printed envelopes, note-heads, shipping-tags, circulars, price lists, etc. The time for marketing honey is approaching, and you should be prepared with a suitable equipment for putting up your honey in the neatest way possible, so as to make it sell readily at good prices.

WHAT CAN WE PLANT IN THE MIDDLE OF JULY?

Well, unless you have more rain than we are having here, or else have water for irrigation, it will not be of much use to plant any thing. If, however, you have rain or water you can plant kidney wax beans, York State Marrow, Henderson's bush lima—in fact, all the beans that mature quickly; and, so far as my experience goes, you will have no bean-weevils at all from seed planted in July; and you will have wax beans for table use without much mistake. If the frost holds off they will also mature for seed. A year ago we put out nearly a quarter of an acre in July. The frost held off so the greater part of them matured good beans for seed; and these beans we found were worth three or four dollars a bushel at wholesale; in fact, the price of kidney wax beans has always been high. You can also put in extra-early corn; cucumbers for pickles; peas, radishes, spinach, summer squashes, etc. But if it does not rain you must supply the water; and I tell you it takes lots of it. A little stream of water such as would run through an inch pipe will do some good for a small garden; but when it comes to acres, with a burning hot sun and a drying wind, such as we are having now, you just want a small millrace. We have been setting out celery by running water down through the furrows before we put in the plants, and they are just thriving beautifully; but it took something like 50 barrels of water to set out 4000 or 5000 plants.

Kind Words From Our Customers.

The goods came all right yesterday. The foundation and sections are very nice. S. H. HOUGH.
Saybrook, O., July 6.

I received the potato-boxes all right, and am very much pleased with them.
Albion, Mich., July 3. C. H. BILLINGHURST.

I received the goods in fine shape; foundation the best of the best; sections the same. Thanks for prompt attention to my order.
Bangor, Mich., July 6. FRANK D. SPENCER.

A KIND WORD FOR FRIEND TERRY AND THE STRAWBERRY BOOK.

[The following letter was written to our old friend Matthew Crawford, of Cuyahoga Falls, O., who forwarded it to us. We judge the writer to be a minister:]

Mr. Crawford:—I have just finished reading that little book you sent me, "Terry on Strawberry Culture," and I must send you a few words in expression of my thanks for the information, and especially the gratification it has given me. It seems to me an all-sufficient guide, even for the most inexperienced, to complete success in growing this most delicious of all fruits; and it is written in such a simple and businesslike style that the veriest tyro can find no difficulty in understanding and following its directions. But what I have specially enjoyed about the book is its unobtrusive but very perceptible religious aroma. It is as delightful as the fragrance of the strawberry itself. It gladdens my heart to find one, when writing a simple treatise on practical horticulture, so cheerfully recognizing and frankly expressing his loving loyalty to our Father in heaven, and giving *him* the thanks which are his due for his bounteous gifts, instead of ascribing them, as so many do, to an impersonal and unintelligent "Nature." The little book is a good sermon (all the better for not professing to be one), not only on *doing our best* with whatever we have to do, but also on gladly and gratefully recognizing our heavenly Father's presence and love in *every* blessing we enjoy. W. H. WILCOX.
Malden, Mass., June 8.

5-Banded Golden Red-Clover Bees.

If you want bees that will work on Red Clover, try one of our five-banded queens. Queens in July, untested, 75 cts.; ½ doz., $3.60; tested, $1.50; select, $2; the very best, $4. Descriptive circular free.

LEININGER BRO'S, Ft. Jennings, O.

Please mention this paper 5tfdb

TILE ✠ DRAINAGE.

BY W. I. CHAMBERLAIN, A. M., LL. D.,

Formerly Secretary of the Ohio State Board of Agriculture, and late President of the Iowa State Agricultural College. At present Associate Editor of the Ohio Farmer.

This is a valuable companion to our other rural books. It embraces the experience of forty years of one of our foremost practical agriculturists, who has laid with his own hands over 15 miles of tile.

Price 35c; by mail, 40c.

A. I. ROOT, MEDINA, OHIO.

Low Freight Rates and No Delays.

When you are considering where to send for your supplies the coming season, get prices and a list of goods on hand, from one of the following dealers, who handle **ROOT'S GOODS** in carload lots, thus securing them at lowest cost. Most of them, except those far distant, sell goods to users at factory prices, while those far distant add approximately only the carload rate of freight, so that you will **Save Time and Money** by buying your supplies of one of these dealers. We can not give here a list of goods kept, as it varies some at the different places according to the varying needs of each locality. Write to the place nearest you for list with prices, and when you write give a list of the goods you want, and mention this paper.

Quite a full line of goods are sold at factory prices by
F. A. Salisbury, Syracuse, N. Y.
H. G. Acklin, 1024 Mississippi St., St. Paul, Minn.
Jos. Nysewander, Des Moines, Iowa.
A good assortment is also kept for the Far West by
Barteledes & Co., Denver, Col.
For California by
G. G. Wickson & Co., San Francisco and Los Angeles.
For Oregon and Washington by
F. L. Posson & Son, Portland, Oregon.
For the Southeast Atlantic coast by
Baltimore Farm-Implement Co., Baltimore, Md.;
and for the Far South by
J. M. Jenkins, Wetumpka, Ala.

A smaller assortment, consisting chiefly of Dovetailed hives, sections smokers, foundation, and extractors is also kept by the following:
Henry F. Hagen, Rocky Ford, Colo. W. K. Ball, Reno, Nev. W. O. Victor, Wharton, Tex. John Nebel & Son, High Hill, Mo. Thos. G. Newman, Chicago, Ill. Walter S. Pouder, Indianapolis, Ind. Vickery Bros., Evansville Ind.

Our Hives, Comb Fdn., Sections, Smokers, Extractors, Perf. Zinc, etc., are furnished by a multitude of other dealers too numerous to mention. If you want to buy goods made at the Home of the Honey Bees, you can get them as cheap as you can anywhere when you consider quality and workmanship, and your orders will be taken care of promptly. Don't expect to get all the goods we advertise, from any of above dealers, and don't expect to get goods they do not agree to furnish; but find out what they agree to furnish, and at what price, by writing for list to address nearest you.

A. I. Root, Medina, O.

In writing to any of above please mention GLEANINGS.

FOR ALL KINDS OF BEE KEEPERS SUPPLIES. ADDRESS LEAHY MFG. CO. HIGGINSVILLE MO.

In writing advertisers please mention this paper

DOVETAILED HIVES, SIMPLICITY HIVES,

SECTIONS, EXTRACTORS, ETC.

FULL LINE OF

BEE-KEEPERS' SUPPLIES.

60-PAGE CATALOGUE. 1tfdb

J. M. JENKINS, WETUMPKA, ALABAMA.

In responding to this advertisement mention GLEANINGS.

"Quigley's Golden Italians"

Are big yellow bees bred for honey-gathering and gentleness. They have stood the past severe winter without protection and without loss. Warranted purely mated. Each, $1.00; 6 for $5.00. Safe arrival and satisfaction guaranteed. Circular of queens and a full line of bee-supplies sent free.

9-tfdb **E. F. QUIGLEY, UNIONVILLE, MO.**

Please mention this paper.

Wholesale and Retail Manufacturer and Dealer in

Bee-Keepers' SUPPLIES.

One-piece Sections a specialty. As good as the Best. Send for catalogue.

W. E. SMITH, Successor to Smith & Smith,
Kenton, Hardin Co., Ohio.

Please mention this paper.

Bingham Perfect Smokers.

CHEAPEST AND BEST ON EARTH.

Patented 1878, 1882, and 1892.

The Doctor, 3½-inch stove, largest smoke and fuel capacity made, $2.00; Conqueror, 3-inch stove, $1.75; Large, $1.50. Postpaid per mail. They all have wide shields, movable bent nozzle, coiled steel wire handle, and inverted Bingham bellows, with Bingham cleated joints. Perfect in principle, perfect in detail, and 14 years the standard in every country.

The Bingham & Hetherington uncapping-knife also belongs in the Perfect series; $1.15.

Original, Unimproved Bingham Bee-Smokers.

Our smaller smokers are as we have always made them. Little Wonder, narrow shield, 1¾-inch stove, 65 cts.; Plain, narrow shield, 2-inch stove, $1.00; Extra, 2-inch stove, wide shield, $1.25.

They are a great convenience in handling the cone and smoke. We can recommend it to all bee-keepers as being just the thing.—QUEIN & FYKE, Ettawanda, Cal.

The best to be had.—C. J. DONALDSON, Lapeer, Mich.

As perfect as need be.—H. M. SEELY, Harford, Pa.

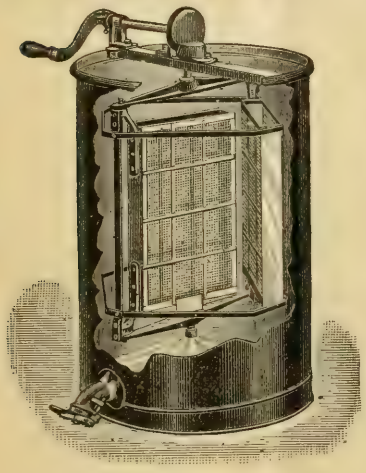
It is just what I wanted.—J. C. KEITHLEY, Shacklefall, Mo.

They are a desirable attachment.—WALTER S. POUDER, Indianapolis, Ind.

I would almost as lief do without the smoke as without the attachments.—HENRY F. HAGEN, Rocky Ford, Col.

To sell again, or rates or circular, send card to **T. F. BINGHAM, Abronia, Mich.**

A Grand Success.



New Cowan Reversible Honey-Extractor.

May be Reversed without Stopping the Machine.

Strong, well made in every respect, light, and of convenient size. The can is but little larger than that of the Novice. The gear is beveled, and covered by an iron shield, and the crank outside the can. Frank McNay, of Mauston, Wis., a bee-keeper who produces tons and tons of extracted honey, says of it:

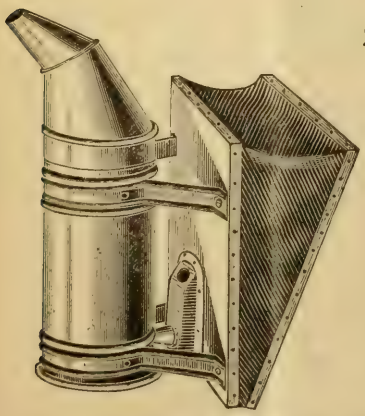
After carefully examining and trying the Cowan extractor, I have failed to find a weak part, and I do not hesitate to say that it is the best extractor made, both in regard to convenience and durability, and I shall replace all of my five machines with the Cowan as soon as possible.

It is indorsed also by J. F. McIntyre, an extensive extracted-honey producer in California; by W. Z. Hutchinson, Dr. C. C. Miller, Dr. A. B. Mason, and others.

Price all Complete, Japanned and Lettered, for L. Frame, $10.

A. I. ROOT, MEDINA, OHIO.

NEW CRANE SMOKER NOW READY.



Smoking Capacity and Strength of Blast Simply Amazing.

The **New Non-Smoke-Sucking Check-Valve,** by which a great blast is secured and the bellows kept clean, and the **double lining of Asbestos and Sheet-steel,** by which the fire-cup and nozzle are kept from becoming uncomfortably hot during usage, are **DISTINCTIVE** and **VALUABLE** features alone possessed by the new implement. It would be impossible to tell of all its unique features, and so we say, try it and fall in love with it.

Price, with 3½-inch fire-cup and curved nozzle, by mail, $2.00; by express, $1.75.

If your nearest dealer in supplies does not keep it, write to the authorized manufacturer,

A. I. ROOT, Medina, Ohio.

N. B.—Don't forget that we are headquarters for all kinds of bee-keepers' supplies. Our new 1893 catalogue of 52 pages now ready for mailing.

Do You Know

That there are **Degrees of Reward in Heaven**, and that some will barely enter there, "saved so as by fire"? For proofs and encouragement, address ***A. H. Van Doren,*** Box B, Camden, N. J., for 140-page cloth-bound book; 50 cts.

---

50 cts. each for untested queens from best imported mothers. **W. C. Frazier, Atlantic, Iowa.**

SPECIAL 10 PER CENT REDUCTION FOR 60 DAYS ON

WIRE NETTING,

SHORT ROLLS, ETC.

We submit below, corrected from last issue, a list of the short rolls and remnants of wire netting that we have received from the factory. We still have a good supply of 2-inch No. 19 netting 4 feet high, which we still offer at these special prices: 1 roll, $3.60; 5 rolls, $17.50; 10 rolls, $34.00. This you notice is 10c a roll higher than our last offer on this size. We have the 3-inch Nos. 19 and 20, 60 and 72 inches wide only, other widths all sold. We have put the price on the following pieces at the same rate as full rolls, except on the 72 inch, on which we offer an extra 10% discount.

Of 2-inch mesh No. 19 wire, we have the following remnants and short rolls at ⅝c per square foot. The figures at the left give the width in inches, and the other figures give the length of each piece in feet. Multiply this by the width in feet, then take two-thirds of the result to find the price of each piece.

30	45, 50, 60, 62, 64, 70, 90, 91, 101, 107, 123, 137, 140, 144, 146.
36	9, 16, 18, 18, 19, 26, 38, 40, 40, 40, 49, 50, 50, 50, 53, 54, 55, 56, 58, 58, 64, 73, 73, 73, 74, 75, 82, 83, 84, 84, 87, 87, 90, 90, 92, 94, 96, 96, 96, 99, 100, 100, 100, 100, 100, 100, 100, 102, 102, 102, 105, 105, 109, 110, 111, 114, 115, 116, 118, 120, 120, 122, 124, 124, 125, 125, 128, 129, 129, 138, 142, 142, 143, 143, 144, 144, 147, 147.
42	20, 131
48	11, 20, 20, 25, 29, 32, 35, 38, 40, 48, 55, 55, 60, 61, 67, 68, 75, 75, 82, 83, 84, 86, 87, 90, 94, 96, 119, 120, 122, 123, 123, 124, 130, 138, 138, 140, 143, 103, 144, 144, 144, 144, 145, 145, 145, 146.
54	72, 88, 88, 143.
60	53, 78, 87, 96, 101, 101, 101, 105, 107, 110, 120, 123, 124, 138, 140, 144, 144, 146, 146.
72	16, 20, 42, 42, 42, 47, 48, 57, 71, 73, 75, 75, 81, 82, 85, 85, 88, 93, 100, 100, 112, 119, 120, 123, 124, 125, 134, 142.

Of 2-inch No. 20 we have the following pieces at three-fifths of a cent per square foot. Arrive at the price in precisely the same way as above, taking three-fifths of the number of feet instead of two-thirds, to get the price in cents.

30	32, 39, 73, 105, 120, 140, 140, 140
36	22, 38, 39, 56, 57, 66, 68, 79, 81, 88, 100, 100, 100, 110, 119, 120, 122, 126, 128, 128, 134, 136, 138, 140, 141, 144, 145.
42	142, 143.
48	41, 55, 60, 66, 70, 85, 86, 92, 98, 105, 114, 140, 143, 145.
54	145.
60	46, 48, 50, 51, 60, 73, 119, 139, 139.
72	25, 38, 44, 45, 70, 75, 76, 79, 100, 100, 128, 137, 139.

In lots of 5 pieces, any one, or assorted kinds, deduct 5%; 10 pieces, 10%; 25 pieces or more, 15%. On the 72-inch netting you may also deduct 10% on single-piece orders; or, in addition to above, on quantity orders. First come, first served. Generally these pieces go off very rapidly, and it may be well to name a second or third choice in case your first may be gone.

A. I. ROOT, MEDINA, O.

AUGITE STOVE-MATS

REDUCED AGAIN.

The stove-mat has proven so good a thing that there are many imitators, and prices are again reduced, owing to the competition between the various manufacturers. We consider none equal to the original "Augite," and we handle it in preference to any other. In the following reduced prices we have got down to "hard-pan," and we do not look for further reductions. Price 10c each; $1.00 per dozen; 6 dozen for $5.50, or 12 dozen for $10.50. By mail, 6c each extra on all sent singly, or 5 cents each on two or more in one package.

A. I. ROOT, Medina, Ohio.

Books for Bee-Keepers and others.

Any of these books on which postage is not given will be forwarded by mail, postpaid, on receipt of price.

In buying books, as every thing else, we are liable to disappointment if we make a purchase without seeing the article. Admitting that the bookseller could read all the books he offers, as he has them for sale, it were hardly to be expected he would be the one to mention all the faults, as well as good things about a book. I very much desire that those who favor me with their patronage shall not be disappointed, and therefore I am going to try to prevent it by mentioning all the faults, so far as I can, that the purchaser may know what he is getting. In the following list, books that I approve I have marked with a *; those I especially approve, **; those that are not up to times, †; books that contain but little matter for the price, large type, and much space between the lines, ‡; foreign, §. The bee-books are all good.

BIBLES, HYMN-BOOKS, AND OTHER GOOD BOOKS.

As many of the bee-books are sent with other goods by freight or express, incurring no postage, we give prices separately. You will notice, that you can judge of the size of the books very well by the amount required for postage on each.

8	Bible, *good print*, neatly bound	20
10	Bunyan's Pilgrim's Progress**	30
20	Illustrated Pilgrim's Progress**	75

This is a large book of 425 pages and 175 illustrations, and would usually be called a $2.00 book. A splendid book to present to children. Sold in gilt edge for 25c more.

6 | First Steps for Little Feet. By the author of the Story of the Bible. A better book for young children can not be found in the whole round of literature, and at the same time there can hardly be found a more attractive book. Beautifully bound, and fully illustrated. Price 50 c. Two copies will be sold for 75 cents. Postage six cents each.

5	Harmony of the Gospels	35
3	John Ploughman's Talks and Pictures, by Rev. C. H. Spurgeon*	10
1	Gospel Hymns, consolidated Nos. 1, 2, 3, and 4, words only, cloth, 10 c; paper	05
2	Same, board covers	20
5	Same, words and music, small type, board covers	45
10	Same, words and music, board covers	75
3	New Testament in pretty flexible covers	05
5	New Testament, new version, paper covers	10
5	Robinson Crusoe, paper cover	10
4	Stepping Heavenward**	18
15	Story of the Bible**	1 00

A large book of 700 pages, and 274 illustrations. Will be read by almost every child.

5	The Christian's Secret of a Happy Life**	25
8	Same in cloth binding	50
	"The Life of Trust," by Geo. Muller**	1 25
1	Ten Nights in a Bar-Room, T. S. Arthur*	05
5	Tobacco Manual**	45

This is a nice book that will be sure to be read, if left around where the boys get hold of it, and any boy that reads it will be pretty safe from the tobacco habit.

BOOKS ESPECIALLY FOR BEE-KEEPERS.

Postage		[Price without postage.
15	A B C of Bee Culture. Cloth	1 10
5	A Year Among the Bees, by C. C. Miller	45
	Advanced Bee Culture, by W. Z. Hutchinson	50
14	Bees and Bee-keeping, by Frank Cheshire, England, Vol. I.§	2 36
21	Same, Vol. II.§ r	2 79
	or, $5.25 for the two, postpaid.	
	Bees and Honey, by T. G. Newman	1 00
10	Cook's New Manual. Cloth	90
5	Doolittle on Queen-Rearing	95
2	Dzierzon Theory	10
1	Foul Brood; Its Management and Cure; D. A. Jones	09
1	Honey as Food and Medicine	05
10	Langstroth on the Hive and Honey-Bee‡	1 25
15	Langstroth Revised by Ch. Dadant & Son	1 25
10	Quinby's New Bee-Keeping	1 40
	Thirty Years Among the Bees, by H. Alley	50
4	Success in Bee Culture, by James Heddon	46
	Handling Bees, by Langstroth. Revised by Dadant	08
	Bee-keeping for Profit, by Dr. G. L. Tinker	25
5	The Honey Bee, by Thos. William Cowan	95
	British Bee-Keeper's Guide Book, by Thos. William Cowan, England§	40
3	Merrybanks and His Neighbor, by A. I. Root	15
4	Winter Problem in Bee-keeping, by Pierce	46

MISCELLANEOUS HAND-BOOKS.

3 | A B C of Potato Culture, Terry** 35

This is T. B. Terry's first and most masterly work. The book has had an enormous sale, and has been reprinted in foreign languages. When we are thoroughly conversant with friend Terry's system of raising potatoes, we shall be ready to handle almost any farm crop successfully. It has 48 pages and 22 illustrations.

5 | A B C of Carp Culture, by Geo. Finley..... 35
5 | A B C of Strawberry Culture, by T. B. Terry and A. I. Root, 144 pages; 32 illustrations 35
5 | An Egg-Farm, Stoddard** 45
| Amateur Photographer's Hand-book**.... 70
| Barn Plans and Out-Buildings*... ..... 1 50
| Canary Birds. Paper,..... ... 50
| Draining for Profit and Health, Warring.. 1 50
10 | Fuller's Grape Culturist**..... ..... 1 40
Farming For Boys*..... 75

This is one of Joseph Harris' happiest productions, and it seems to me that it ought to make farm-life fascinating to any boy who has any sort of taste for gardening.

7 | Farm, Gardening, and Seed-Growing**..... 90

This is by Francis Brill, the veteran seed-grower, and is the only book on gardening that I am aware of that tells how market-gardeners and seed-growers raise and harvest their own seeds. It has 166 pages.

12 | Gardening for Pleasure, Henderson*..... 1 85

While "Gardening for Profit" is written with a view of making gardening PAY, it touches a good deal on the pleasure part; and "Gardening for Pleasure" takes up this matter of beautifying your homes and improving your grounds without the special point in view of making money out of it. I think most of you will need this if you get "Gardening for Profit." This work has 404 pages and 203 illustrations.

12 | Gardening for Profit, new edition**..... 1 85

This is a late revision of Peter Henderson's celebrated work. Nothing that has ever before been put in print has done so much toward making market-gardening a science and a fascinating industry. Peter Henderson stands at the head, without question, although we have many other books on these rural employments. If you can get but one book, let it be the above. It has 376 pages and 138 cuts.

| Gardening for Young and Old, Harris** ... 1 25

This is Joseph Harris' best and happiest effort. Although it goes over the same ground occupied by Peter Henderson, it particularly emphasizes thorough cultivation of the soil in preparing your ground; and this matter of adapting it to young people as well as old is brought out in a most happy vein. If your children have any sort of fancy for gardening it will pay you to make them a present of this book. It has 187 pages and 46 engravings.

10 | Garden and Farm Topics, Henderson**.... 75
Gray's School and Field Book of Botany... 1 80
5 | Gregory on Cabbages; paper*..... 25
5 | Gregory on Squashes; paper*..... 25
5 | Gregory on Onions; paper*..... 25

The above three books, by our friend Gregory, are all valuable. The book on squashes especially is good reading for almost anybody, whether they raise squashes or not. It strikes at the very foundation of success in almost any kind of business.

15 | How to Make the Garden Pay.**..... 1 35

By T. Greiner. This is a new book, just out, and it gives the most explicit and full directions for gardening under glass of any book in the world. Those who are interested in hot-beds, cold-frames, cold-greenhouses, hot-houses or glass structures of any kind for the growth of plants, can not afford to be without the book.

| Handbook for Lumbermen..... 10
10 | Household Conveniences.. ..... 1 40
2 | How to Propagate and Grow Fruit, Green* 15
2 | Injurious Insects, Cook..... ... 25
10 | Irrigation for the Farm, Garden, and Orchard, Stewart*..... ..... 1 40

This book, so far as I am informed, is almost the only work on this matter that is attracting so much interest, especially recently. Using water from springs, brooks, or windmills, to take the place of rain, during our great droughts, is the great problem before us at the present day. The book has 274 pages and 142 cuts.

3 | Maple Sugar and the Sugar-bush**..... 35

By Prof. A. J. Cook. This was written in the spring of 1887 at my request. As the author has, perhaps, one of the finest sugar-camps in the United States, as well as being an enthusiastic lover of all farm industries, he is better fitted, perhaps, to handle the subject than any other man. The book is written in Prof. Cook's happy style, combining wholesome moral lessons with the latest and best method of managing to get the finest syrup and maple sugar, with the least possible expenditure of cash and labor. Everybody who makes sugar or molasses wants the sugar-book. It has 42 pages and 35 cuts.

1 | Poultry for Pleasure and Profit**..... 10
11 | Practical Floriculture, Henderson* 1 35
10 | Profits in Poultry*..... 90
2 | Practical Turkey-raising 10

By Fanny Field. This is a 25-cent book which we offer for 10 cts.; postage, 2 cts.

4 | Peabody's Webster's Dictionary..... ... 10

Over 30,000 words and 250 illustrations.

2 | Rats: How to Rid Farms and Buildings of them, as well as other Pests of like Character 15

This little book ought to be worth dollars instead of the few cents it costs to any one who has ever been troubled with these pests, and who has not! It is written in such a happy vein that every member of the family will read it clear through, just about as soon as they get hold of it. It contains a complete summing up of the best information the world can furnish.

1 | Silk and the Silkworm..... 10
10 | Small-Fruit Culturist, Fuller..... ..... 1 40

10 | Success in Market-Gardening*... 90

This is a new book by a real, live, enterprising, successful market-gardener who lives in Arlington, a suburb of Boston, Mass. Friend Rawson has been one of the foremost to make irrigation a practical success, and he now irrigates his grounds by means of a windmill and steam-engine whenever a drought threatens to injure the crops. The book has 208 pages, and is nicely illustrated with 110 engravings.

| Ten Acres Enough.... .. . . 1 00
| The Silo and Ensilage, by Prof. Cook, new edition, fully illustrated 25
| Talks on Manures*..... ..... 1 75

This book, by Joseph Harris is, perhaps, the most comprehensive one we have on the subject, and the whole matter is considered by an able writer. It contains 366 pages.

2 | The Carpenter's Steel Square and its Uses. 15
10 | The New Agriculture; or, the Waters Led Captive..... 75
2 | Treatise on the Horse and his Diseases..... 10
5 | Tile Drainage, by W. I. Chamberlain..... 35

Just out. Fully illustrated, containing every thing of importance clear up to the present date.

The single chapter on digging ditches, with the illustrations given by Prof. Chamberlain, should alone make the book worth what it costs, to every one who has occasion to lay ten rods or more of tile. There is as much science in digging as in doing almost any thing else; and by following the plan directed in this book, one man will often do as much as two men without this knowledge. The book embraces every thing connected with the subject, and was written by the author while he was engaged in the work of digging the ditches and laying the tiles HIMSELF, for he has laid literally miles of tile on his own farm in Hudson, O.

5 | Tomato Culture..... 35

In three parts. Part first—by J. W. Day, of Crystal Springs, Miss., treats of tomato culture in the South, with some remarks by A. I. Root, adapting it to the North. Part second—By D Cummins, of Conneaut, O., treats of tomato culture especially for canning-factories. Part third—By A. I. Root, treats of plant-growing for market, and high-pressure gardening in general. This little book is interesting because it is one of the first rural books to come from our friends in the South. It tells of a great industry that has been steadily growing for some years past; namely, tomato-growing in the South to supply the Northern markets. The little book, which is fully illustrated, gives us some pleasant glimpses of the possibilities and probabilities of the future of Southern agriculture. Even though you do not grow tomatoes to any considerable extent, you will find the book brimful of suggestions of short cuts in agriculture and horticulture, and especially in the line of market-gardening.

5 | The New Onion Culture*..... 20

This book is by T. Greiner, and it gives full particulars of the plan of planting onion seed in a greenhouse, hot-bed, or cold-frame, and planting the onions out in the field at the time we usually sow the seed. The author thinks that 2000 bushels of the large tropical onion can by this method be raised on an acre.

2 | The New Celery Culture 15

This summing-up of this new industry amounts to this: You fix your ground just as rich as you can possibly get it, with stable manure, chemical fertilizers, or any thing else that will do the business. Then put out your plants 7 inches apart each way, and give them water enough to make them boom right along from the word go. The idea is somewhat new; but enough succeeded in 1892 to demonstrate that, like the new onion culture, it promises great possibilities.

3 | Winter Care of Horses and Cattle..... 35

This is friend Terry's second book in regard to farm matters; but it is so intimately connected with his potato-book that it reads almost like a sequel to it. If you have only a horse or a cow, I think it will pay you to invest in the book. It has 44 pages and 4 cuts.

8 | What to Do and How to be Happy While Doing It, by A. I. Root..... 50
3 | Wood's Common Objects of the Microscope**..... 47

NEW BOOKS ON GARDENING.

2 | Celery for Profit, by T. Greiner..... 25

The first really full and complete book on celery culture, at a moderate price, that we have had. It is full of pictures, and the whole thing is made so plain that a schoolboy ought to be able to grow paying crops at once, without any assistance except from the book.

3 | Onions for Profit 45

Fully up to the times, and includes both the old onion culture and the new method. The book is fully illustrated, and written with all the enthusiasm and interest that characterize its author, T. Greiner. Even if one is not particularly interested in the business, almost any person who picks up Greiner's books will like to read them through.

5 | Manures; How to Make and How to Use them; in paper covers..... 45
6 | The same in cloth covers..... 65

Covering the whole matter, and discussing every thing to be found on the farm, refuse from factories, mineral fertilizers from mines, etc. It is a complete summing-up of the whole matter. It is written by F. W. Sempers.

7 | Market-gardening and Farm Notes, by Burnett Landreth 90

The Landreths are the pioneer seedsmen of America; and the book is worth fully as much as we might expect it to be. I think I received hints from it worth the price, before it had been in my hands fifteen minutes. It is exceedingly practical, and tells what has been done and what is BEING done, more than it discourses on theory.

A. I. ROOT. Medina, O.

The Northwest Home of the Honey Bee.

COLE & LOWERS,
DEALERS IN
A. I. ROOT'S BEE SUPPLIES,
Breeders of Italian Queens and Bees.
Write for Price List.
LATONA, KING CO., WASHINGTON.

Crossman's Got 'em

Those Beautiful Golden Queens.

Reared from the best five-banded stock. **Unexcelled** for **Business, Beauty,** and **Gentleness.** Satisfaction guaranteed. Warranted queens after June 1, 90c each; $9.00 per doz. Tested, $1.50 each. Select tested, $2 50. Safe arrival insured. Send for circular.

W. P. CROSSMAN,
Ballinger, Runnels Co., Texas.

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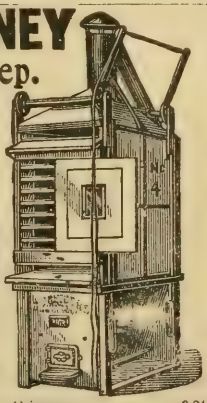
GRAY CARNIOLANS GOLDEN ITALIANS

WE are headquarters in the United States for **Gray Carniolans.** A full description of this *wonderful* and *hardy* race of bees is given in our price list for 1893. Our **Golden Italians** are as good as the best. Each race is bred for business, in a separate apiary near no other bees. Get our prices before ordering, as we can save you money. Descriptive price list free.

F. A. Lockhart & Co., Lake George, New York.

MAKE MONEY While You Sleep.



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Evaporates Fruit **DAY and NIGHT.** Catalogue free upon application.
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Please mention this paper. 9-24db

Bee-Hives.

Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue 23 2tdb
W. H. PUTNAM, River Falls, Pierce Co., Wis.

FRIENDS,

I have a fine strain of Italian bees, and my apiary will be located six miles from other bees, so perfect mating of queens is assured. Will be pleased to receive your orders. Prices are as follows:

1 untested queen,	$1.00	6 untested queens,	$4.75
3 " "	2.75	12 " "	6.50

Tested queens, each, $1.50
Safe arrival guaranteed. Address

A. S. PARSON,
SUCCESSOR TO FRANK HOWARD,
GARDEN CITY, KAN.

California Bee-Keepers!

Can obtain ROOT'S GOODS, also California-made Supplies, from
WM. STYAN, SAN MATEO, CAL.

JUST SPLENDID.

Mr. H. Alley:—The queen I got of you last fall is just splendid. She is the best queen in an apiary of 150 stands. Would not take $10 for her.
Moravia, Cal. JOHN A. PEASE.

Price of such queens, $1 each.

HENRY ALLEY, Wenham, Mass.

Golden Queens From Texas.

My bees can not be surpassed for business, beauty, and gentleness. Safe arrival and satisfaction guaranteed. Untested queens—March, April, and May—$1 each. **50** fine Tested Queens for early orders, $1.50 each. Order early. Send for price list. 5-16db.

J. D. GIVENS, Box 3, Libson, Tex.

For new price list of

PURE ITALIAN BEES AND QUEENS, AND WHITE AND BROWN FERRETS, ADDRESS
N. A. KNAPP,
ROCHESTER, LORAIN CO., O.

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Muth's Honey-Extractor.

Square Glass Honey-Jars,
Tin Buckets, Bee-hives.
Honey-Sections, &c., &c.
Perfection Cold-Blast Smokers.

APPLY TO
CHAS. F. MUTH & SON, Cincinnati, O.

Send 10-ct. stamp for "Practical Hints to Bee-keepers."
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TAKE NOTICE!

BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH,
14tfdb New London, Wis.

Did You Know

That my 44-page Catalogue is now ready? I have the largest stock of Bee-keepers' Supplies in New England, at prices away down. My brand of XX White Thin Foundation, 12 feet to the lb., is the finest in the market (so say my customers). Just send a postal for samples and prices, before you forget it. Address

7tfdb **WM. W. CARY, Colrain, Mass.**

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READY AGAIN!

My location enables me to rear those nice Golden Queens, by Doolittle's method, as cheaply now as at any time in the North. Untested, 75c; 6 for $4.00; 12, $7.50. Last year's tested, $1.25; select, $1.75; breeder, $2.50. Safe arrival and satisfaction guaranteed.

J. B. CASE, Port Orange, Vol. Co., Fla. 5tfdb

5-Banded Golden Italians.

Three or five banded queens, each, 75c; 6 for $4.25. Nuclei and full colonies cheap. Catalogue free.

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Eggs and Plants. Several varieties. Best quality. Any quantity. Finely illustrated catalogue free. Address GEER BROS., St. Marys, Mo., or H. B. GEER, Nashville, Tenn.

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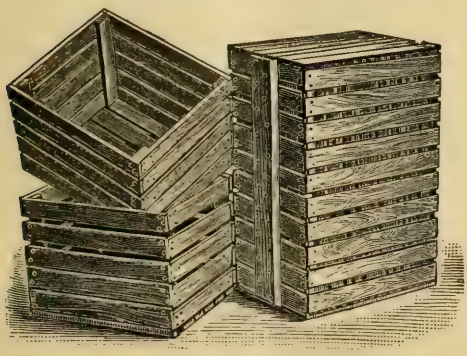
Send for catalogue free. Address **SAMUEL JONES,** Highland Park College, Des Moines, Iowa. 1-19db

BUSHEL BOXES.



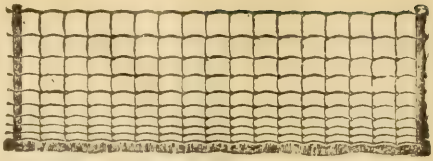
The above cut shows our new-style *all-slatted bushel box.* We have two other styles; one has slatted bottom and sides with solid ends in three pieces called the *slatted bushel box.* The other has solid ends and close bottom and sides, and is bound with galvanized iron and called the *galvanized bound box.* These boxes were devised by T. B. Terry for handling potatoes, for which purpose nothing could be handier. The potatoes are picked up into the boxes in the field and left in them till sold. Other crops, such as cucumbers, tomatoes, and apples are being handled in these same boxes. They are of such a size that two go crosswise in an ordinary wagon-box. Outside measure is 14¼x16⅞x12½ deep, and they hold a bushel of potatoes level full so they can be piled one upon another. The above cut shows two *all-slatted* boxes nailed up, and a bundle of 15 alongside; 13 of the 15 are in the flat, packed inside the other two, and nails of the proper kinds are included. The *slatted* and *galvanized bound* boxes are put up in the same way, except there are only 12 in a package instead of 15. Each package weighs about 85 to 90 lbs.

PRICE LIST.

All-slatted bushel box, per crate of 15..... .. $1 50
Slatted bushel box, per crate of 12..... ..1 50
Galvanized bound bushel box, per crate of 12....2 10

In lots of ten crates, 5 per cent discount will be deducted. Price each, nailed, 15, 18, and 22 cents, respectively. A 20-page pamphlet called Handling Farm Produce, telling all about these boxes, mailed free on application.

A. I. ROOT, Medina, O.



Who Killed Barbed Wire?

I, said Coiled Spring.
Woven up in a sling, I gave him a fling.
But I **never** kill—
Any other thing, nor even blood bring.

Coiled Springs are woven only by the

PAGE WOVEN-WIRE FENCE CO., Adrian, Mich.

☞In responding to this advertisement mention GLEANINGS.

IF YOU WANT BEES

that will just "roll" in the honey, try Moore's strain of Italians, the result of 14 years' careful breeding.

Wm. Stevenson, Pasadena, Cal., says: "I have tried queens from several of the best queen-raisers, but have found none that equal your strain."

Reduced prices: Warranted queens, 80c each: 3 for $2.00. Strong 3-frame nucleus, with warranted queen, $2.50. Safe arrival and satisfaction guaranteed. Those who have never dealt with me, I refer to A. I. Root, who has purchased of me over 600 queens. Circular free.

J. P. MOORE,
11-12d *Morgan, Pendleton Co., Ky.*

☞In responding to this advertisement mention GLEANINGS.

5-Banded Golden Red-Clover Bees.

If you want bees that will work on Red Clover, try one of our five-banded queens. Queens in July, untested, 75 cts.; ½ doz., $3.60; tested, $1.50; select, $2; the very best, $4. Descriptive circular free.

LEININGER BRO'S,
Ft. Jennings, O.

Please mention this paper. 5tfdb

50 cts. each for untested queens from best imported mothers. **W. C. Frazier, Atlantic, Iowa.**

TESTED QUEENS 80 CTS. I requeen my whole yard every year, and now again offer about 50 fine Italian tested queens at 80c each, or two for $1.50. Mismated queens at 30c each. My queens are equal to the best. By return mail. *T. H. KLOER.*

14-tfbd 426 Willow St., Terre Haute, Ind.

Eastern Supply House.

We furnish everything used in the apiary, and at bottom prices. Illustrated circular free.

I. J. STRINGHAM, 105 Park Place, N. Y.

21-20db Please mention this paper.

Cash for Beeswax!

Will pay 21c per lb. cash, or 24c in trade for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 28c per lb., or 30c for *best selected wax.*

Unless you put your name *on the box,* and notify us by mail of amount sent, I can not hold myself responsible for mistakes. It will not pay as a general thing to send wax by *express.*

A. I. ROOT, Medina, Ohio.

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CONVENTION NOTICE.

The Northern Illinois Bee-keepers' Association will meet at the residence of O. J. Cummings, two miles northeast of Rockford, Ill., Aug. 15, 1893. B. Kennedy, Sec., New Milford, Ill.

Special Notices.

WINTER OR EGYPTIAN ONION-SETS NOW READY.

Price 15c per quart; $1.00 per peck; $3.50 per bushel. If wanted by mail, add at the rate of 10c per quart extra for postage.

HONEY MARKET.

We have received a good deal of new honey since our last report, both comb and extracted, all of very choice quality. We are able to offer it at the following prices:

Choice white comb honey, in 1-lb. sections, mostly 24-lb. cases, 1 to 3 cases, 17c per lb.; 4 to 9 cases or over, 16c per lb. Write for prices on 50 cases or over.

Choice clover extracted honey, in 60-lb. cans, 2 in a case—one 60-lb. can, 9c per lb.; 1 case of 2 cans, 8½c per lb.; 3 cases of 2 cans or over, 8c per lb.

We hope to have Western honey to offer in our next issue.

VICTOR AND COLUMBIA BICYCLES.

We offer for sale at a bargain one Model B Victor bicycle; one Model 29 Ladies' Columbia, and one Model 32 Columbia, all in good condition, having been run less than a year, and probably the most popular make of wheels on the American market to-day. Our only reason for wanting to sell is that, having become experienced riders, we desire to get lighter-weight wheels, which we can now use with safety. We do not advise new riders to get the light-weight wheels till they learn to ride and know how to give their wheel good care. Those interested will please write for particulars.

MILLER KEYLESS LOCKS.

In a recent number of Gleanings, reference was made to a combination or keyless lock used by T. B. Terry on his house and barns. We have secured a supply of these locks, and now have several in use on our buildings, giving good satisfaction. We are prepared to furnish them at $1.25 each. Postage extra, 30 cents, if sent by mail. The style we have is a rim lock to screw on the surface, will work on either right or left hand door, and unlock from either side. Other styles are furnished by the Miller Keyless Lock Co., Kent, Ohio.

KIND WORDS FROM OUR CUSTOMERS.

The Cowan extractor is received all right. I am well pleased with it. It is just the machine for me.
Girard, Pa. F. H. Seares.

QUEENS SAFELY TO IRELAND.

The queens arrived safely by afternoon mail in excellent order. One is on a frame of capped brood in a hive long queenless; the other, under a drone-cage in a hive unqueened this spring. No. 1, which is marked 1, and I judge from Harrington, I think must be accepted now; the other I am not so sure of, but it appears all right. H. L.
Cor Castle, Innishannon, Ireland, July 1.

SAY!

Did you know *TESTED* that Green sold *QUEENS* OF HIS CHOICE STRAIN OF YELLOW HUSTLERS

For Only $1.00?

It's so. Before July 1st, $1.50. Mismated queens, 35c. Have your orders booked now. Full colonies and nuclei at low prices. 12tfdb

J. A. Green, Ottawa, Illinois.

UNTESTED ITALIAN QUEENS,

Bred from best imported stock, 60 cts. each; 6 for $3.00. Safe arrival guaranteed. **H. G. QUIRIN,**
14-tfbd **Bellevue, Huron Co., Ohio.**

FOR SALE.—1½-horse-power engine, fly-wheel 18 in., 2½-in. face. Rob. B. Gedye, La Salle, Ill.

Wants or Exchange Department.

Notices will be inserted under this head at one-half our usual rates. All advertisements intended for this department must not exceed five lines, and you must say you want your adv't in this department, or we will not be responsible for errors. You can have the notice as many lines as you please, but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices offering articles for sale, can not be inserted under this head. For such our regular rates of 20 cts. a line will be charged, and they will be put with the regular advertisements. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange strawberry and raspberry plants, bee-hives and fixtures, 100-egg Reliable incubator, instructive books and periodicals, etc., for Italian nuclei or offers.
Mickel Farm, New Lisbon, N. Y.

FOR exchange.—A lot 30x100 feet for Barnes foot power saw and f'd'n mill. L. L. Esenhower.
112 South 3d St., Reading, Berks Co., Pa.

WANTED.—To exchange 40 ten-frame 2-story Langstroth hives, used but a short time, for Italian, hybrid, and black bees.
G. L. Unterkircher, Manchester, Mich.

WANTED.—To exchange extra good set double driving harness, hand made, for safety bicycle.
A. Blue, Harnessmaker, Bladensburg, O.

WANTED.—Winchester shotgun or offers, for a trio of English Beagle hounds three months old, two females and a male. The best rabbit hounds on earth. D. S. Hall, So. Cabot, Vt.

WANTED.—To exchange bees in 8-frame hives for typewriter, bicycle, Barnes saw, or any thing useful. W. R. Tate, Bowling Green, Miss.

WANTED.—To exchange yellow Italian queens, also some of the late varieties of strawberry-plants, for bees or offers. Mrs. Oliver Cole,
Sherburne, Chenango Co., N. Y.
14-tfdb Chenango Valley Apiary.

WANTED.—What have you to exchange for pointer puppies? E. B. Redfield, Harlan, Ia.

WANTED.—To exchange Perfection winter cases, fit any hive, 12 and 24 lb. honey shipping-crates, one-piece sections, foundation, etc., for extracted and comb honey, or offers. Any quantity.
C. L. Hill Mfg. Co., Box 120, Dennison, O.

WANTED.—To exchange Italian bees for a Jersey or Holstein calf.
John Burr, Braceville, Ill.

HONEY COLUMN.

CITY MARKETS.

BUFFALO.—*Honey.*—We advise all owners of honey to wait a while before marketing. It is too early to send it here or to any other market, from the fact there is too much fruit arriving to make any demand for honey; when the small fruits are out of the way there is usually an excellent demand for honey. Later on we can handle a hundred tons or more as satisfactorily as it can be sold in any market in the United States.
BATTERSON & CO.,
July 19. Buffalo, N. Y.

CHICAGO.—*Honey.*—We are receiving frequent consignments of the new crop of comb honey. It is certainly as fine as any we have ever had come to this market. The demand for it, however, is not very active, but at this writing we have been able to close out the receipts very soon after arrival. We hope to continue to do so. The prices realized have been 16@17 for the best lots. Crooked combs and others not so desirable, sold at 15. There still remain some old, dark lots that it is very difficult to sell. Extracted is also quiet. Dealers are not taking hold very freely. It is ruling from 6@7. Beeswax, 23@25. R. A. BURNETT & CO.,
July 19. 161 So. Water St., Chicago, Ill.

ALBANY.—*Honey.*—We received our first consignment of new comb honey July 17. Last season we received none until August 6, which would indicate that this season is much earlier. From information received, the crop promises to be a large one throughout New York State. It is too early to forecast prices, but we do not anticipate much change from last season. CHAS. MCCULLOCH & CO.,
July 20. Albany, N. Y.

MILWAUKEE.—*Honey.*—As yet very little new honey has appeared in this market; and in the absence of demand the quotations are almost nominal. The prospect seems fair for a good supply, and, if prices are not too high, a good demand. Hence producers must not expect too much, but send forward their new crop and encourage the people to buy and eat the sweet. White 1-lb. sections, 16@18; white extracted, 7@8; dark, 5@7. A. V. BISHOP,
July 15. Milwaukee, Wis.

PORTLAND.—*Honey.*—We are jobbing extra white, 15@16; amber, 13@14; extracted, 6@6½. We were supplying the wholesale grocers with extracted until a broker sold 2 cars of honey, delivered here, at 5c for extracted; 10½@11 for comb. Correspondence solicited. LEVY, SPIEGL & CO.,
July 14. Portland, Ore.

MINNEAPOLIS.—*Honey.*—Market is improving; fancy white is selling at 17@18; California, 15@16; strained honey, 8@10, according to quality and size of package; dark, 12@13. There is a better movement this week than we have had for some time.
July 18. J. A. SHEA & CO.,
Minneapolis, Minn.

CINCINNATI.—*Honey.*—Trade is dull in all its branches, with a fair demand for extracted honey at 5@8 on arrival. Prices for comb honey are nominal, with no choice honey on our market. Demand for beeswax is fair at 20@23 for good to choice yellow on arrival.
CHAS. F. MUTH & SON,
July 21. Cincinnati, O.

KANSAS CITY.—*Honey.*—The new honey crop in this vicinity is going to be light. Some few shipments of comb have been received, and are being offered at 16@17; extracted, 5@7. Beeswax, 22@25.
CLEMONS, MASON & CO.,
July 20. Kansas City, Mo.

CLEVELAND.—*Honey.*—Our market will merit about 15c for No. 1 white honey. Beeswax, No. 1, 28; No. 2, 25. Demand fair.
WILLIAMS BROS.,
July 18. 80 & 82 Broadway, Cleveland, O.

DETROIT.—*Honey.*—Best white comb honey, 14@15; demand slow. Extracted, 7@8. Beeswax, plentiful at 22@25. M. H. HUNT,
July 19. Bell Branch, Mich.

KANSAS CITY.—*Honey.*—Comb honey, 1-lb. white, 17; 1-lb., light weight, 15; extracted, white, 6½@7; dark and southern honey, 5. Beeswax, none on the market; receipts light; demand the same.
HAMBLIN & BEARSS,
July 20. Kansas City, Mo.

BOSTON.—*Honey.*—We are receiving small consignments of new honey (comb). It is very fine, selling from 16@18. Extracted, 7@8. No beeswax on hand. BLAKE & RIPLEY,
July 20. Boston, Mass.

ST. LOUIS.—*Honey.*—No changes to note. Market steady, demand quiet. Prime beeswax, 23.
D. G. TUTT GROCER CO.,
July 19. St. Louis, Mo.

FOR SALE.—7500 lbs. of extracted white-clover honey. It is No. 1 honey, thoroughly ripened up in hives; it is put up in 60-lb. tin cans. I will take 8c delivered on cars here. F. W. HOLMES,
Coopersville, Ottawa Co., Mich.

WANTED.—To correspond with parties having white clover honey for sale, extracted or comb.
W. T. ZINK, Nichols, Greene Co., Missouri.

WANTED.—Comb and extracted honey, best quality only. WALTER S. POUDER,
175 E. Walnut St., Indianapolis, Ind.

BUFFALO, N. Y. Unsurpassed Honey Market.
BATTERSON & CO. Responsible, Reliable, Commission Merchants. 18tfdb **and Prompt.**

CHAS. ISRAEL & BROS., 110 Hudson St., N. Y.
WHOLESALE DEALERS & COMMISSION MERCHANTS. *Honey* and *Beeswax.*
Established 1875.

White SHIPPING-CASES.
To have your honey sell well, use our beautiful cases, 12 and 24 pound sizes. Send for illustrated catalogue of every thing needed in the apiary.
M. H. HUNT, Bell Branch, Mich.

$6.00 will buy one good "EDLAND" typewriter, 78 characters, almost new; cost $11.00.
J. N. PATTERSON, England, Pa.

Queens at Cost
at the following prices,
by return mail, or money refunded.
1 untested queen, 65c; Six untested queens, $3.50
One tested queen, $1.25.
Imported and best breeding queens, also large orders, prices given on application. Each race is bred in a separate apiary near no other bees. Descriptive price list free. Address
F. A. Lockhart & Co., Lake George, New York.

A large, yellow, prolific queen, 75c; 6 for $4. Breeders, the very best, strictly pure, guaranteed to breed all yellow queens, $2. Satisfaction given. Reference, A. I. Root.
W. H. LAWS, Lavaca, Seb. Co., Ark.

Root's Goods for the West.
Address Jos. Nysewander, Des Moines, Ia.

ONCE MORE we are up with orders for our
Golden Italian Queens
that have given such general satisfaction. If you want the best, send in your orders. Single queen, $1; six for $4 50. Circular free.
CHAS. D. DUVALL, Spencerville, Md.

ITALIAN QUEENS at 75 cts., or three for $2.00.
MRS. A. A. SIMPSON, Swarts, Pa. Box 48.

Feeding Back

Honey to secure the completion of unfinished sections can be made very profitable if rightly managed during the hot weather of July and August. In "ADVANCED BEE CULTURE" may be found complete instructions regarding the selection and preparation of colonies, preparation of the feed, manipulation necessary to secure the rapid capping of the combs, time for removing the honey, and how to manage if a few sections in a case are not quite complete; in short, all of the "kinks" that have been learned from years of experience and the "feeding back" of tons of honey.

Price of the book, 50 cts.; the REVIEW one year, and the book, for $1.25; or the REVIEW from July (when the Experiment-Apiary Reports began), to the end of the year, and the book, for only 75 c. Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Mich.

PORTER BEE ESCAPES are used and pronounced a great labor-saving implement by **Chas. Dadant & Son, Prof. A. J. Cook, Chas. F. Muth, Jno. S. Reese, J. H. Martin, John Andrews, F. A. Gemmell, Wm. McEvoy, A. F. Brown, Thomas Pierce,** and many other prominent bee-keepers. Descriptive circular and testimonials mailed free. PRICES: Each, post-paid, with directions, 20c.; per doz., $2.25. *Return them and get your money back after trial if not satisfied.* For sale by dealers. Address **R. & E. C. PORTER LEWISTOWN, ILL.**

Tie Up

Your patronage to a good reputation. I am giving general satisfaction. See here:

The two queens received. They are regular beauties.

ISAAC HAYS.
North Yakima, Wash.
May 29, 1893.

Many thanks for those two beautiful queens sent in May; their bees are now showing up and are yellow to the tip. ISAAC HAYS.
North Yakima, Wash., June 29, 1893.

My queens are the best that can be reared, and their bees are beautiful, gentle, and good workers. One warranted queen, $1.00; six for $5.00.

S. F. TREGO,
Swedona, = = = Ill.

Now Ready.

Untested Italian queens, 75 cts. each. The golden or leather-colored kind. Also bee-keepers' supplies. Send for circular.

JOHN NEBEL & SON,
High Hill, Mo.

Canadians, Look Here!

On and after July 15th I will sell two-frame nuclei, both frames of brood crowded with bees, with five-banded golden Italian queen, for $2.00 each; also 150 five-banded untested queens, 75c each, and a few exceedingly choice breeders, warranted to produce seven-eighths five-banded bees, $3.00 each. Send in orders early.

Hives, Sections, Smokers,

And all Goods needed in the Apiary at rock-bottom Prices. Send for price list. References given.

C. A. OUELLETTE,
Tilbury Center, Ont., Can.

PATENT WIRED COMB FOUNDATION

Has No Sag in Brood-frames.

Thin Flat-Bottom Foundation

Has no Fishbone in the Surplus Honey.

Being the cleanest, it is usually worked the quickest of any foundation made.

J. VAN DEUSEN & SONS,
Sole Manufacturers,
Sprout Brook, Montgomery Co., N. Y.

Oh, Mamma!

Have you heard of the

FREE

200-Page Bee-Book

given to every **NEW** Subscriber to the old

AMERICAN BEE JOURNAL?

Oldest, Largest, Best, Cheapest and the only **Weekly** Bee-Paper in America. 32-pages; **$1** a year. *Sample free*

GEO. W. YORK & CO

56 Fifth Avenue, CHICAGO, ILL.

To new subscribers: the journal alone sent for 3 months for 20 cents.

Great Reduction.

Sections at greatly reduced prices. Hives, Shipping-cases, etc., at Bed-Rock Prices. Write for free Illustrated Catalogue and Price List.

G. B. Lewis Co.,
Watertown, = = = Wis.

1tfdb Please mention this paper.

QUEENS.

Queens, either 3 or 5 banded, 75 cts. each; ½ dozen, $4.25; 1 dozen, $8.00. Breeding queens, $2.00. Circular free.

J. F. MICHAEL, German, Darke Co., O.

Please mention this paper

BIG DISCOUNT on Foundation and Sections. Thin foundation, 50 cts. per lb.; brood, 40 cts. No. sections, $2.75 per M. Every thing cheap, price list free. E. H. TRUMPER, Bankers, Mich.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
PUBLISHED BY A. I. ROOT
$1.00 PER YEAR MEDINA OHIO

Vol. XXI. AUG. 1, 1893. No. 15.

STRAY STRAWS

FROM DR. C. C. MILLER.

THE YELLOW COLOR of beeswax is due to the pollen consumed by the bees.

TO PREVENT BREAKING combs in extractor, F. Trebnitz, in *Centralblatt*, recommends to extract from one side before uncapping the other.

I HELD A QUEEN-CELL in my fingers while the inclosed queen was quahking. You would be surprised to know how strongly it jarred my fingers.

WAS THERE EVER any one thing so earnestly sought after by bee-keepers as some plan to prevent swarming? Surely, out of all the studying and experimenting, something of value will result.

WHITE is justly considered the best color for hives, providing they are painted; but a French writer thinks it is more agreeable to the bees if the part about the entrance be painted some color from yellow to brown.

RED CLOVER is becoming unprofitable for farmers on account of an insect-pest, and Hutchinson says the acreage of alsike in his part of Michigan is on the increase as a consequence. Nice thing for bee-keepers.

COMPLAINT IS MADE by U. Beaudoux, in *Progres Apicole*, that foundation is made with more cells to the square inch than natural comb contains, resulting in rearing inferior workers. Possibly the matter needs consideration in this country.

I MADE NUCLEI one day—perhaps a dozen—using bees that had been queenless a day, and gave a pulled queen to each nucleus. Every queen was killed. If the bees had been queenless twice as long, I think all would have been well.

I MEASURED some comb built by the bees of a queen I got from Dr. Murdock, and found there were 33 cells to 7 inches, instead of the orthodox 35. Then I measured some built by common bees, and was surprised to find these latter still larger.

NEW THINGS I'm always a little shy of till I have thoroughly tried them, or, rather, till the bees have tried them; but I did have pretty strong faith in the Langdon non-swarmer. I'm sorry to say it doesn't seem to work "in my locality."

A KEENER DISAPPOINTMENT doesn't often come to me in bee-keeping matters than to find that queen-excluders do not exclude. I'm somewhat skeptical as to whether perforations can be made small enough to prevent the passage of queens without being too great a hindrance to workers.

HUTCHINSON is "redhot" on the subject of State experiment apiaries. It's a good subject to be redhot about, and he's going to make it the special topic for the August number. He has a capital leader on the topic in the July number.

MY BEES seem worse than usual this year about uniting and going back to the wrong hive when they swarm without a queen. I don't like having the supers of one hive deserted in that way while another hive has bees piled all over it.

QUEEN-EXCLUDERS are made with wood slats, and also of an entire sheet of perforated zinc, wood-bound. I am told that ten of the latter are used to one of the former. Why? They are a trifle cheaper, but the slatted ones keep their shape ever so much better.

DOOLITTLE makes a paddle of peculiar construction with which to kill bees that persist in chasing and scolding. A very good substitute for this is a piece of very heavy wire cloth. It will fetch the bee every whack, while a stick will miss nine times out of ten.

I DON'T OFTEN give a young queen a chance to do so, but the other day a queen flew away just as soon as it came out of its cell. Flew strong too. But that's nothing new; for when half a dozen queens come out with an after-swarm, all but one of them must have just hatched.

DEAD BEES to a considerable number are often seen in front of a hive to which a queen has been introduced, their curled-up position showing that they have been stung to death. I think this is an indication that the queen will be received all right. The bees which make an attempt on the queen's life are stung to death.

FIVE CELLS to the inch is commonly understood to be the correct measurement of worker comb. As a result of 36 measurements, Cowan found great diversity, ranging from 4.74 to 5.38 to the inch. Some that I measured showed larger cells than his largest, being 4.66 cells to the inch—the work of a black swarm that came to me.

HERR REEPEN, in *Centralblatt*, gives the word "bee" in different languages, as follows: Latin, *apis;* Italian, *ape* or *pecchia;* Spanish, *abeja;* French, *abeille;* German, *biene* or *imme;* Swedish, *bi;* Dutch, *bij;* Polish, *pszczolla;* Russian, *p'cha-lah;* Greek, *melissa;* Danish, *bi;* Arabian, *nahli;* Malay, *burong mata.* Wouldn't it be handier if they'd all call it "bee"?

M. Geremie, in *Le Progres Apicole*, gives an account of experiments which he thinks proves that the industry of a colony depends on the queen. He had an industrious and a lazy colony. He changed queens, and within a week the two colonies changed character. So the mere presence of the queen changed the behavior of the bees.

Your guesswork, as you call it, on page 575, friend Root, may overestimate, possibly. You take the output of sections for 1892, and then say the average should be larger, as 1892 was a poor year. To be sure, it was a poor year; but the output of sections did not measure the crop, for sections were made and ordered, in the main, before any one knew any thing as to the crop. Were not millions of those sections left over till this year?

I don't know for certain, but I think that a pulled queen that is so young that it hasn't yet got its full color is received more readily than one that has become more mature. I suppose they are sometimes imprisoned in the cell by the bees two or three days, so that a pulled queen may not be so very young. If your queen has some age, then the bees to receive her must be longer queenless, while a very green queen will be accepted, for a time at least, in a colony having a laying queen.

CUTTING QUEEN-CELLS.

CELL-CUTTING, IF THOROUGHLY DONE, A SURE PREVENTIVE OF AFTER-SWARMING, ACCORDING TO DOOLITTLE.

In "Stray Straws" for July 1 I find these words: "Cutting queen-cells, it is certain, can not be relied on as a preventive of swarming; but it is equally certain that the practice has a tendency to delay and in some cases entirely prevent it." I should like to ask the doctor what is meant by "swarming," as used by him in this straw. If he means the kind of swarming that we sometimes have in early spring, then I would say that it "can not be relied upon," for in such swarming the bees never prepare or leave any queen-cells, hence there are none to cut. Of all the swarming that ever comes to any apiary, this swarming of discontent, often carried on to the extent of one-fourth to one-half of the whole apiary, is the most disastrous and hardest to overcome of any swarming the bees ever do. With no queen-cells to cut, and no way of successfully stopping such swarming that I know of, the bee-keeper is nearly or quite helpless in the matter. Next, if Dr. M. meant after-swarms, of which nature gives more in number than of all other swarms put together, then I should like to ask him when he found out that the cutting of queen-cells could "not be relied on" to prevent it. I am well aware that the way queen-cells are generally cut "has a tendency to delay" after-swarms, and it also has a tendency not only to delay but to increase the number which will issue. The usual plan is to wait six days after the first or prime swarm issues, when the hive is to be opened, and all of the queen-cells excepting one cut off, when it is claimed no more swarms will issue. After trying this plan for several years I found it worked just exactly as a bee-keeper told me a few days ago it did with him this year. He said he had usually hived these after-swarms in boxes about the parent colony till the old colony had stopped swarming, when he dumped all together in the old hive, letting the young queens fight it out, when they would go on and work well; and if at a suitable time in the honey harvest when this was done, such colonies would do good business, giving a surplus of honey. While he was thus doing, another bee-keeper came along and told him that, if he would cut all the queen-cells but one on the sixth day he would have no more trouble hiving after-swarms in boxes about the parent colony. Offering to show him how, they opened a hive which had swarmed six days before, and bee-keeper No. 2 cut all the cells but one. At the usual time no swarm issued, and bee-keeper No. 1 thought he had learned something of value; but when the 16th, 17th, and 18th days arrived after the issue of the prime swarm, he found he had more swarms from hives thus treated than from those not touched at all. He said that the bees built queen-cells over the larvæ still left in the hive, that was of an age at which it could be converted into a queen; destroyed the cell or the queen from it after she had hatched, which was left in cutting cells; and as the bees had become strong in numbers before the queens matured from the newly built cells, the bees would swarm till the old hive was so depopulated that it would not build up for winter unless helped by the apiarist.

I have put before the readers of Gleanings what he said, as it so nearly described what I used to find to be a fact that I could not do better if I tried. I have often wondered how long it would take to teach bee-keepers throughout the world that such cutting of cells was a failure and worse than a failure. But there is a way of cutting queen-cells so as to entirely prevent after-swarms, which has stood the test of years with me. It is this: Wait eight days after the prime swarm issues, then cut all the cells but one, and you have a sure thing of it, as, in this case, all of the larvæ are past the age of being converted into queens. But the way I prefer, and the one I practice, is this:

On the evening of the eighth day, just before going to bed, all outside noise being hushed at this time, I listen a moment with my ear at the side of the hive which cast a swarm that long ago; and if the young queen has hatched, and the bees have concluded to send out an after-swarm, I hear the piping of the young queen, which *always* precedes the issue of an after-swarm. If I hear this piping, I open the hive early the next morning and cut off every queen-cell which is found, shaking off the bees from each frame in front of the entrance, so that no cells will be missed. There is now no guesswork or hope so about it, but a sure thing, as one queen has her liberty and you take away all the rest. In all other ways there is a possibility that the cell left may not hatch, in which case the colony will be queenless; but in this case we know that there is a young queen present, for we heard her say so the night previous. If no piping is heard when we listen, then listen again the next night, and so on to the night of the sixteenth day; and if no piping is heard then, we may know the bees have concluded not to send out any after-swarm.

This seems like quite an undertaking; but let me say to the reader, that, in practice, it is not half the work required by the old plans, considering the certainty there is in it. But I think I hear Dr. Miller saying, "You ought to know that I meant neither of these kinds of swarming. I meant the prime swarm." Well, this being so I accept the statement as true, but wish to add that I believe much honey is lost which might have been secured had the bees been allowed to swarm when they got ready, instead of throwing them out of a normal condition by cutting cells, and then having them swarm at last under conditions not so favorable for a crop of surplus honey as would have been had they been let alone.

Borodino, N. Y. G. M. Doolittle.

PROF. H. W. WILEY.

BIOGRAPHICAL.

When we met Prof. Wiley, the Chief Chemist of the Department of Agriculture, at the Washington convention, we were very favorably impressed with his general appearance. Although we had previous intimations that we had misjudged him in the past, we felt very sure of it then. In answer to many inquiries, we would say that Prof. Wiley is the man who started what has been called the "Wiley canard;" but as he now seriously regrets it—as much so as any bee-keeper—and seems disposed to render every assistance, we feel sure that every one will be glad to make his acquaintance, and forget the past. He impressed us as being a gentleman in every respect—a scholar and a scientist; and as he is in a position to do us great service, we take pleasure in introducing him to the bee-men.

PROF. H. W. WILEY.

Harvey W. Wiley, Chief of the Chemical Division of the U. S. Department of Agriculture, at Washington, D. C., was born at Kent, Jefferson Co., Ind. He graduated from Hanover College in 1867, receiving the degree of A. B. Subsequently the degrees of A. M. and Ph. D. were conferred upon him by the same institution. He commenced his public career as professor of Latin and Greek in Butler University, where he remained three years. In 1871 he took the degree of M. D. at the Indiana Medical College, and the following year became a teacher of science in the Indianapolis High School. In 1873 he graduated from Harvard University with the degree of S. B., and in 1874 accepted the chair of chemistry in Butler University, which he occupied for only a short time, being called to a similar position in Purdue University, the Agricultural College of Indiana, where he remained until 1883, with the exception of one year spent at the University of Berlin. From 1881 to 1883 he served as State Chemist of Indiana, and for three years (1874–7) was professor of chemistry in the Indiana Medical College.

When State Chemist of Indiana, Prof. Wiley directed much of his attention to the study of glucoses and sugars, and his reputation as an expert on these subjects resulted in a call to his present position as Chemist of the Department of Agriculture. Under his capable supervision the chemical laboratory of that Department has rapidly improved, the scope of the work been enlarged, and methods systematized, until at present it ranks as one of the foremost laboratories of the country.

Aside from his general scientific pursuits, Prof. Wiley has pushed his investigations in two special directions; namely, the solution of the problem of increasing our sugar production, and the adulteration of foods and the various methods for its detection.

In the interest of the former of these subjects he visited in 1886 the principal sugar-factories of Europe, inspected the different kinds of machinery, methods of operation, etc. As a result of this visit the diffusion process was introduced into this country, and is at present in use in some of the large sugar-plantations of the United States. During the whole period of his connection with the Department of Agriculture, Prof. Wiley has been the director of the government sugar-experiment stations, and was the originator of the alcohol process—a trial of which was so successfully made in Kansas two years ago. The skill and perseverance displayed by him in carrying on these experiments, and the service rendered to a great agricultural industry, entitle him to much commendation. He has interested himself in the development of new, and the improvement of old varieties of sugar-producing plants, and has, in short, done more, in a scientific way, than any other one man to develop and put on a paying basis the sugar-industry of the country.

In pursuing his scientific researches, honey has received particular attention from Prof. Wiley. He is in hearty accord with the bee-keepers of the country; has delivered addresses before the American Bee-keepers' Association, and devoted much time to the establishment of accurate and reliable methods for detecting adulterations of honey. All known methods of honey analysis have been carefully tried under his direction, and, as a result of this work, together with the new processes he has devised, it is possible now to detect all adulterations of honey when practiced on a commercial scale.

One of the most interesting and useful of the new processes devised by Prof. Wiley consists in the detection of the percentage of levulose in honey by means of its deportment with polarized light at widely separated temperatures. There are still many points in connection with honey analysis which require more careful elaboration, and to the solution of these problems Prof. Wiley is giving much of his time. He will not rest satisfied until the bee-keeper is absolutely relieved from the disastrous competition of the honey-adulterator in all the markets of the United States.

Prof. Wiley is connected with various scientific societies. He has served as president of the Washington Chemical Society; president of the Chemical Section of the American Association for the Advancement of Science; president of the Association of Official Agricultural

Chemists, and is and has been for seven years its permanent secretary and executive officer. At the present time he is president of the American Chemical Society—a rapidly growing national organization numbering over five hundred members, and embracing many prominent American chemists. He has published a large number of scientific papers, together with numerous addresses and government reports, both of a technical and popular character, and has announced for publication a text-book on Agricultural Chemical Analysis, which will be the most elaborate work of the kind ever issued from the press. At the present time Prof. Wiley is Chairman of the Joint Committee having in charge the World's Congress of Chemists, which is to meet in Chicago on the 21st of August proximo.

THOSE NEW-FANGLED TRAPS.

WILL IT PAY THE AVERAGE BEE-KEEPER TO INVEST IN THEM? THE LANGDON NON-SWARMER, ETC.

Dear Friend Root:—I have been reading GLEANINGS with much interest for some time back, and in particular what pertains to self-hivers, non-swarmers, and queen-traps. Now, do you really think that it is best for us, all things considered, to adopt so many new traps simply to try to make our bees do something contrary to their natural instincts? And don't we lose, by so doing, the snap and vigor with which a new swarm goes to work after being hived in the good old way? Besides that, I think the majority of bee-keepers agree with me, that they can get more honey, especially in the comb, from the old colony and its swarm than they could if the old colony did not swarm at all; and as to the increase of stock, I don't think there will be much kicking on that score as long as we have winter losses like the past winter. And is it really cheaper and better to invest in those new inventions than to hire help during the swarming season? Those traps and devices must be put on the hives and taken off again, as well as looked after while on. We must also have a place to store them when not in use. I think that, by looking this question squarely in the face, and considering all things connected with it, there will be fewer of these devices in use ten years from now than there are at present.

Some few people may find trouble in getting help. They can't find a suitable man? Well, then, what is the matter with hiring a woman? or perhaps you have a daughter who would take an interest in bees, and hive swarms, if paid four or five dollars a week; if not, there is always some other man's daughter in your neighborhood who would be glad to take the position rather than to go to some factory to work, as a great many girls and young women do in this district (of course, this is not intended for the Rambler). And, by the way, I think we should be doing more good to the community by paying our money to some person in need of employment to hive our swarms, if the results were the same as far as our bees are concerned, than by using the devices alluded to.

Graysville, Pa., July 8. P. D. MILLER.

[There is danger in going to extremes both ways. It is folly for the average bee-keeper to invest in *every* new thing; and on the other hand it is folly to always go along in the same old rut, without looking for some better way. A wise discrimination should be exercised, and new things that promise well should be tried on a limited scale; and if the trial of a few justifies the trial of more, well and good. We are glad that our correspondent has written as he has, because we fear there is a tendency on the part of bee-keepers to rush to the other extreme.]

FLORIDA.

GRAPEVINES FOR SHADE; HONEY CANDYING, ETC.

In reply to W. U. R.'s question, page 525, July 1, I will say there is no better shade for bees in Florida than the scuppernong family of grapevines. Build an arbor such as is illustrated on page 625, September 1st GLEANINGS of 1890, and cover it the same way, and you have almost a perfect shade for bees, and an abundance of fine fruit. It will not take over two years to cover the sheds (or arbors) if vines are set forty feet apart on each side; and after that some can be taken out as they get crowded. I consider the Thomas variety the best. It is a large purple grape. They drop their leaves in winter and let the sun in on the hives, and put on leaves to shade them at the right time in the spring. One vine under favorable conditions may be made to cover densely a quarter of an acre, and there are vines much larger than this that bear so many bushels of grapes I dare not give the figures. My grape crop from these vines this year will net me as much as my honey crop, according to present prospects.

While the vines are small the sheds can be covered with cabbage-palmetto leaves tied on to wire or nailed on to 1x2 wooden slats. These once properly put on will last until the vines cover the sheds.

I set my posts 8 feet apart each way, and use 2x4 scantling 10 feet long to tie them crosswise and support wires or slats. These are nailed at a height to clear the head at the front, and some 6 to 8 inches higher at the back.

S. P. (page 526) can not keep his honey from candying. It will not ripen in the hive so but that it will candy more or less, even though left right there; and when his bees are raising brood in the latter part of winter and early spring he will find little white pellets of it tumbled out of the hive by the bees after they have sucked out all the liquid honey that they can get. I have evaporated saw-palmetto honey (that least liable to granulate) down to where it felt like putty, in my sun evaporator, and still it will partly granulate. Why not let it granulate all that it will, and educate consumers up to the fact that the granulation is a guarantee of purity that can not be disputed, and that it takes only a little heat to liquefy it, as is the case with maple sugar?

The honey crop here is almost a total failure up to date; and even should the mangrove yield honey from this time until the close of the bloom, but little honey would be gathered, as the bees are not in shape to do rapid work.

This is the first season in my sixteen years' experience in bee-keeping here that the black mangrove has put on a liberal bloom and yet secreted no honey. I believe it to be in this section as reliable a honey-producer as there is in existence. Its roots are covered twice each 24 hours by the tides. We have had a very dry May and June, but it would seem as though drouth should have little or no effect upon it. Some climatic or electric condition unknown to us is probably responsible for keeping several of our apiarists away from the World's Fair who had calculated on their honey crop to supply the means. As the orange-groves are flourishing, I think you will see me there a little later, brothers Root and Mason.

Sarah Thacker, page 527, has probably been misled by W. M. Hoge's rascality. Those who should know, say that there is not a particle of honey in his widely advertised "Honey of Figs." I know him to be a rascal and a cheat, to be avoided by all honest men.

Hawks Park, Fla., July 11. W. S. HART.

RAMBLE 89.

CALIFORNIA HONEY; WHAT CAUSES IT TO DROP IN PRICE, ETC.?

The notice, upon the borders of the Rambler's apiary, "Danger to horses and women," and the temper of the bees, had a very salutary effect upon my neighbors, resulting in their keeping afar off. For instance, one evening, just as the work of the day had been finished up, a shout attracted my attention; and, adjusting my "spects," I saw a fellow an eighth of a mile away, among the greasewood bushes, swinging something in his hand that looked very much like a jack-rabbit. I thought he wanted to give it to me, and shouted to him, "No! don't want him," and turned toward my cabin; but he shouted and gesticulated all the more, and I went down to see what the ado was about. A nearer view showed that, instead of a rabbit, he was swinging a wooden-jacketed two-gallon can, and wanted honey. His wants were supplied, and, after soothing his fears by telling him that the bees had gone to roost, I interested him by showing the operation of the honey-extractor. His wife was still further away in the bushes, with the horse and road-cart, and it took our united shouts and persuasions to get her to drive up anywhere near the apiary. A big June-bug flew over her head, and the gone-to-roost theory had but little weight with her; and as soon as her husband and the honey were adjusted, the whip was applied, and away they went, with my most benign smiles following them. Other lovers of honey in Bloomington were also in a nervous state over bees, June-bugs, etc.; and now whenever the Rambler walks over to the post-office for his mail, charming ladies, with an empty pail in hand, will request that, "the next time you come over, take this pail and bring me two bits' worth of honey." Sometimes

PEDDLING HONEY "A LA CHINAMAN."

I have more pails of various sizes than I know what to do with. Now, Jake Smith's plan for peddling honey on a "syckle" may do for Jake's boy on a smooth road; but when it comes to following a blind trail through greasewood bushes and cactus-plants, the "syckle" is clearly out, and I think of adopting the Chinese plan as far better. The slant-eyed Mongolians have a way of carrying quite large loads of various articles by properly balancing them over the shoulder, on a long pole; and so my plan for distributing honey is, to attach my multitude of pails to a pole, as shown in the sketch.

Although there are many in this State whose palate delights to be tickled with a touch of honey, there is not so much consumed here as there would be if we had a colder climate. Honey is a heat-producing food; and as our climate supplies nearly all of the exterior heat that the system demands, the interior application of heat in the form of food is not called for. The great bulk of our honey is, therefore, shipped to other consumers, and our sales of honey are probably conducted upon a larger scale, and different from methods in vogue in any other State in the Union. It is safe to say that there is no other portion of the country, with an equal area, that ships so many carloads of honey as Southern California.

The clouds and winds during the rainy season are watched with care by the bee-keeper. If the winds blow from the right quarter to bring rain, there is evident pleasure; but when, after a few drops fall, the wind changes and the skies become clear, there is liable to be a spell of the blues. It may be surmised, then, what the effect is when several inches of rain falls; and the more inches recorded, the higher the spirits rise. Over 20 inches of rain is quite a sure indication that there will be a good honey-flow.

The next anxious condition the honey-producer gets into is when he begins to whirl the extractor, and the honey begins to flow. About this time the local dealers begin to come around to renew their acquaintance with the bee-men, or a new buyer may be on the ground, and, of course, he is very affable, and wishes to be remembered when you sell your honey. Upon these first rounds no prices are offered, and the producer's mind is left in a state of speculation. After a few tons of honey begin to accumulate, the dealer comes around again, and this time carefully makes an offer. It is usually low enough to suit the most exacting bee-keeper, and not a few grasp at it as a drowning man grasps at a straw, and, of course, a carload sold at the lowest figure the dealer dare offer sets the price for all of the rest. This year the price offered for extracted honey has been 4½ cents, and this long before any one knew whether the yield would be large or small. The dealer, of course, has great stories to relate about great yields here and there, while the fact appears, at this date, that, though we had a fine rainfall, the honey-yield as compared with the crop of 1886 is but an average crop.

The Rambler contends that the obstacles the honey-producer has to contend with in order to obtain uniform prices for his honey are small in comparison with the fruit-industry. The greatest obstacle is the selling of the honey for first offers, and long before the real output is known. These first and low offers are taken usually by producers whose need of money is immediate. For instance, a bee-keeper, thus in need of money, drove out with a dealer to one of his apiaries, and sold the honey there for 4½ cents; they then went to another apiary, and half the honey in that apiary was sold for 4¾; and before they reached town the other half was sold for 5 cents, and the honey all of the same quality—sage. If the dealer was willing to pay 5 cents for a portion, it is reasonable to suppose that 5 cents could have been obtained for all of it. In Wall Street parlance, the dealer is a bear—he bears down upon the price

all he can. What we need is a good healthy bull to boost the price up. I think the bull could be found in thorough organization. I find that California bee-keepers do not enter-

WHAT CALIFORNIA BEE-KEEPERS NEED.

tain ideas of exorbitant prices for their product. Their ideas range between 5 and 6 cents, with a strong leaning, of course, toward the latter, and about 10 cents for comb honey. A uniform price of 5½ cents this season would have been satisfactory, I think, though some are still holding for the 6. That a better order of things will come out of the present chaos is the hope of the RAMBLER.

A RHODE ISLANDER'S SUCCESSFUL WAY OF WINTERING.

HE ARGUES FOR SEALED COVERS.

The following described method of wintering bees has, in twelve successive years, proved to be the ideal way for this climate. Situated close to the salt water, where the weather is very changeable, varying from ten to fifteen degrees below zero to fifty or sixty above it within a day or two, and severe cold frequently followed by warm dense fogs, with the moisture condensing on every thing, have proved to be a combination hard to overcome. The fall honey-flow, also, has to be taken into account, as its earliness or lateness and quality all affect the preparations.

As soon as the supers are removed, the combs are reduced to seven or eight, and the stores are equalized. About Sept. 15th, varying according to the season, a final inspection is made, and the enameled mats are put on for good, not to be disturbed again until the following spring. The bees soon have every thing glued up air-tight, and also have built up under the mats such winter passageways as they want. These latter are easily and quickly removed in the spring, and yield quite a lot of wax. Within a couple of weeks the sawdust packing is put in, using it about three inches thick on sides, ends, and top. Under the hives, leaves are generally pushed, but not always. The hives are single-wall, with outer case for winter, and some are "Falcon" chaff. All have eight-inch entrances, which are left wide open all winter.

The non-disturbance of the mats until late spring I find very important. The condition of a colony can be easily told by a glance under the combs, and a look at the entrance; and a little listening will frequently do. Of course, the ages of all queens are known. If a colony is running down, little can be done for it until well in the spring, and then it is most profitable to unite it with one of its *stronger* neighbors—never with another weak one.

All ways of preparation, with frames varying from 4½ inches to 20 inches deep, have been thoroughly tried, and the foregoing succeeds every time. ARTHUR C. MILLER.

Providence, R. I., July 12.

BEES OF INDIA.

AN INTERESTING LETTER; MORE ABOUT THAT HONEY ON A STICK.

A. I. Root:—Some three months ago you printed an account of a new race of bees in India, which made their honey around a stick or twig. I was so much interested in the matter that I wrote to the address given, the Rev. W. R. Manley, who has replied in the interesting letter which I inclose for you to make such use of as you think proper.

JULIUS TOMLINSON.

Allegan, Mich., July 13.

[Mr. Manley's letter is as follows:]

Mr. Julius Tomlinson:—Yours of April 18, and the newspaper containing some remarks of the Rev. D. H. Drake, in regard to our Indian honey-bees, came by last week's mail. I am sorry that the information I can give you in reply to your questions will have little scientific value, as I am not an entomologist, and have never made any special study of the bees of this country. Besides, I am dependent, in part, for the statements I shall make, upon information derived from natives who have little idea of scientific distinctions, or of strict accuracy in stating what they know; but what I shall give you outside of my own observation is, to the best of my knowledge, reliable.

There are said to be four distinct varieties of honey-bee in this country, and all of them different from the honey-bee of America. My old friend Mr. Drake is wrong, however, in referring them exclusively to Udayagiri. They exist certainly in other places in the Madras Presidency, and doubtless all over India. Udayagiri honey has indeed a local reputation, like Michigan potatoes or Minnesota wheat, but this is due to purely local circumstances, and not to any peculiarity of variety.

We used to have a great deal of honey brought to us at Ongole, eighty miles from here, but nearly all of it had such a rank taste as to make it unfit for table use. I have also eaten honey produced in the Shevaroy Hills, at an elevation of 5000 feet; but though it was considered very fine by those who lived there, it was far from being as good as the Udayagiri honey. This, also, varies greatly in quality. We bought some not long since which had a distinctly bitter flavor, from being made, so the native that brought it said, from the flowers of the margosa, a tree the leaf and bark of which have an intensely bitter taste; while on the day your letter arrived we bought some more that was very nice. None of the honey that we get here, however, has quite the taste of the tame honey at home. There is always more or less of a peculiar flavor that detracts a good deal from the quality.

The kind of honey described by Mr. Drake is made by a bee not more than half the size of the American bee. It is usually placed, as he says, around a small twig, a single comb in a place, six to eight inches long by two or three in thickness; but that we used to have offered us in Ongola was often attached to a prickly-pear leaf, and we got our mouths filled with cactus thorns before we learned to let such as that alone. I am sorry that I can give you no information in regard to the bee itself, farther than its small size and the fact that its honey is always placed in the open air. Honey of this kind is usually brought in the comb, and is apt to have a good deal of "bee-bread" in it, with some young bees. The number of bees in a single colony

is probably small, to judge from the size of the comb.

The natives tell me of two other varieties, smaller still than the one I have described, but said to be true honey-bees. These deposit their honey in hollow trees, or in holes in walls, or among rocks. There is but little of it, and it is said to be of very inferior quality. I have never seen them, but there seems no reason to doubt that such exist; the smaller variety of the two, as described to me by a native of Udayagiri Hill, who brings us a good deal of honey, being about as large as houseflies.

There is still another variety of bee which makes most of the honey we buy. This is considerably larger than your tame bee, the hinder part of the body being longer and more pointed, while the wings and head are of a dark smoky color. I should judge there were about as many of these in a colony as of the tame bees at home. They usually attach their comb to the under surface of an overhanging rock on the face of a cliff, inaccessible to any thing but human ingenuity; and the single comb which they make is about a foot and a half broad where it adheres to the rock, of about the same depth, and three or four inches in thickness. Whether the wax of which these combs are made is essentially different from that of our domestic bees in America, I do not know; but it seems to have the power of resisting the intense heat of a blazing sun in a way that I am quite certain the comb of our tame bees would not.

In gathering this kind of honey the natives let themselves down by a rope from above; and the story is told here of one man who went alone to rob some bees, as he did not wish to share his spoils with another; but the rope by which he climbed down gave way, and he was killed by falling to the bottom of the precipice. In the Shevaroy Hills the natives use ladders of split bamboo instead of ropes. These can be made as long as required by lashing pieces together. It is then lowered over the cliff, and a man climbs down to where the honey is. Fires are usually built below the bees in order to stupefy them by the smoke; but this in most cases would have little effect, owing to the height of the bees from the foot of the cliff. However, I have been told by those who bring us honey that they care little for the sting of the bees, having become so inoculated with the poison that it produces little effect.

The temper of these large bees is quite as uncertain as that of our tame bees at home. I once saw a colony of them that had attached their comb to the under side of a beam over a driveway in front of the judge's court in Nellore, and were working away apparently without disturbing, or being disturbed by, the crowds of people that were constantly coming and going. On the other hand, there are three swarms of them on the face of the cliff near a spring from which our drinking-water is brought while we are on the hill, and a few days ago they attacked and stung an old man and a boy, apparently without any provocation. The old man comes up every day with our mail and marketing, and the boy, a relative of one of our servants, was going down with him. They had stopped at the spring to eat some food when the bees commenced stinging the boy. The old man wrapped his own upper cloth around the boy and brought him back up to the house; but in doing so he had left his own body exposed, and stings by dozens were picked out of his body and legs and the boy's head. There was no immediate swelling, though the pain seemed to be severe. I gave them some simple remedies, and the old man went down the hill. The boy remained, and the next morning his face was swollen beyond recognition. The swelling did not subside for three days, and it was longer than that before the old man was able to climb the hill again. From this it would seem that the poison injected by the sting of these bees does not act so quickly as that of our tame bees, but is no less potent.

You speak of them as a *new* variety of bees. They may be new so far as knowledge of them in America is concerned, but they are probably much older, in point of fact, than our own domestic bees, and, so far as I can learn, have never been domesticated. The wild bees which abounded in Palestine in Bible times probably did not differ greatly if at all from those found in India to-day.

The price of honey varies with the season. In times of excessive drouth it is scarcely to be had at any price. The natives, of course, destroy every colony of bees they rob; and in a country like this part of India, with its scanty rainfall and frequent drouths, the wonder is, almost, that the bees do not become exterminated. This is one of the abundant years, and we are offered much more than we have any use for; still, it is not really cheap. For seven pounds of strained honey the other day my wife gave a rupee and a half, which, at the present rate of exchange, would be about seven cents a pound. This, considering comparative quality and the relative value of money, is quite as dear as good American honey at twenty-five cents a pound.

W. R. MANLEY.

Udayagiri, Madras Presidency, India, May 30.

[We are not able to identify the races of bees mentioned by Mr. Manley. Possibly Mr. Benton can enlighten us. We should be pleased, also, to have him tell us what he knows about the bees that put their honey "on a stick."]

REPORT FROM GERMANY.

BY THE EDITOR OF THE "ILLUSTRIERTE BIENENZEITUNG.

The season of 1892 in Germany was a remarkable one. In some sections of the "land of Dzierzon" the honey crop was a total failure; in others the bees got their winter stores; and in others they stored more honey than was ever before reported in our bee-journals. In North Germany we had a very good crop from linden (basswood), locust, and other honey-plants; and in South Germany there has been a flow of honey from fir-trees. Some colonies gave 200 to 300 lbs. of rich extracted honey, besides winter stores. About the source of this honey, our doctors disagree. Doctor Dzierzon asserts that this honey, not being gathered from the nectaries of blossoms, was the product of the excrement of the tree-lice; and some doctors, and with them the most of the practical bee-keepers, say it is a product of the sap of the plants, which would secrete on the upper side of the leaves after very hot days and chilly nights. Other of the German bee-keepers think both of these opinions are right, so that we may as well have plant-lice honey as honey from the sap of the plants. Now, every bee-keeper knows that plant-louse honey is dangerous as food for the bees to winter on, and therefore many German bee-keepers were anxious about this species of honey from the sap of the plants. But though the winter was severe, all the bees in Germany came out very well. So it proved that the honey from the fir-trees was not dangerous—at least, not so this winter. This honey has a very dark color. It is darker than the honey from buckwheat; yes, it is nearly black and glutinous, and has a smell and taste like tannin.

That the bees in Germany, where nearly all bee-keepers prefer outdoor wintering, came out very well, was, of course, besides other circumstances, the result of some fine days we had in the middle of February, when our bees had a successful cleansing flight. But from this time till to the beginning of June we had cold, rough, stormy days, and now and then night-frosts. On the morning of June 20 the leaves of the potatoes were injured in this way, and no rain worth mentioning. It has so happened that these days were always mixed up with some very fine ones, on which our bees not only could fly out, but found from the end of March more or less new honey and pollen. This, I think, was the reason that the bees in Germany prospered; and so much the more, when the bee-keeper had planted some honey and pollen yielding plants in the neighborhood of his apiary. Please do not misunderstand me in this case. I am fully aware that the planting of some patches—yes, some acres—of honey-

plants will not suffice to put the extractor in motion or to get filled supers of comb honey. No, the gain of such planting lies in another direction. According to a common saying of our old experienced bee-masters, "One ounce of newly gathered honey and pollen, carried into the entrance of the hive by the bees, is worth more than one pound from the old storage in the hive or feeding." I am of opinion that drops of honey and little bits of pollen gathered early in the spring will agree well with the health of a colony, causing them to thrive, even if after some fine days followed by some very bad weather. Experience has taught me so, and the last spring has confirmed it.

For more than twenty years I have taken care that my bees find on their flights, early in the spring, some fresh honey and pollen; and therefore I planted in the apiary, or close by, snowdrops, crocuses, scrophularia vernalis, willows, and winter rape. I sowed the rape in the month of August on a patch two rods square. Rape is one of our best honey-plants, and will blossom early or late in the month of April, according to the weather. New honey and pollen, although they came in driblets, have the stimulative effect peculiar to spring, and will serve to make the old stores in the hive, or the food one may be feeding, agreeable to the bees, and at the same time will do them much good. Of course, the more bees can gather from this fresh honey and pollen, the better it is for them. In most parts of Germany the plants yielded this year, from the end of April till the beginning of July, so much honey during those fine days that followed the bad ones, that, at the time of fruit-blossoms, the extractor had to be set in motion to keep the honey from crowding out the brood.

The first natural swarms appeared in April, some in May; but only a few. Where the extractor was not used at the right time, there was no swarming at all.

On the beginning of June the cold and stormy days were over: hot days and warm nights set in, and prevailed till this time. The reports from South Germany tell us that the fir-trees yield as much honey as in the year before. In North Germany, at least here in Wilsnack, we have not such honey, and only honey from the blossoms of the plants. Therefore I can say that we have had a very good honey season till now; and if buckwheat and heather will yield as much honey as the other honey-plants have yielded, we in Germany may say that the year 1893 was one of the best ones in Germany we have had for a decade.

C. J. H. Gravenhorst.

Wilsnack, Germany, July 5.

THE THREE METHODS OF QUEEN-REARING.

DOOLITTLE'S PREFERRED; J. D. FOOSHE DESCRIBES HOW HE USES IT.

Friend Root:—I have just received Gleanings, and have read some articles with pleasure. Gleanings is always good, but now and then we see an article from some one of experience along the line we are working on. This number has an article from S. F. Trego, on cell-building. I have been interested in this subject for ten or twelve years, and have made queen-rearing a specialty; therefore I like to read any thing I see pertaining to it. I have tried three plans, and will give them as I learned and experimented with them.

1. By removing the queen and letting the bees build cells, or placing a frame of choice brood, of the right age, in a queenless colony. Neither of these gives cells enough. The frame of brood inserted in a queenless colony is better, as they will build as many cells on one frame as they will on all the frames the other way.

2. By cutting strips of comb containing larvæ of the right age, and fastening to the bar—about three bars—including top, and known as the Alley plan.

3. The Doolittle wax-cup plan. These I fasten to bars, as on the Alley plan, and transfer the larvæ, which we might term grafting. The latter plan I have almost entirely adopted, because I can get more cells built out by that plan than by any other, and they stand well apart, and in nice condition to place in protectors. I generally have them built out in double stories above the excluder; but when there is no honey coming in, there is a great deal of risk in upper stories unless the excluder is of the right size. Mine is larger than the more modern make, and therefore queens sometimes get above; and even if they do not, the inquisitive little fellows will very often tear down the cells, commencing about two days before they are to hatch; therefore, to have cells built in an upper story, the colony ought to be very strong—so much so that the bees should be inclined to build comb. I like this cup plan better than the other two, because there is no mutilation of comb, and we get cells that hatch with more regularity. I notice you say that you have never succeeded with this plan satisfactorily. I gave my plan a year or two ago, by which I never failed to get a half or more of the cups accepted. I usually put forty to fifty cups into a colony which has been made queenless, and from which all brood has been removed, say, six hours, or long enough for them to moan when you open up their hive. When they do that, the colony is in proper condition to receive cells with larvæ, and not before. Some colonies will not moan or cry under 12 hours, and sometimes not at all; but when they don't, they never start as many cells as when they do. The cells, before giving the larvæ, should have hung in a weak hive for a few hours, say 12 to 24, before transferring the larvæ. I always get better cells, and more of them, by this plan than by either of the other two. The objection to the first plan mentioned is, that the combs are mutilated, and the cells are irregular in hatching, and it does not give as many cells at a time as I should wish to run 100 nuclei or over.

I like the Alley plan better than the first; but it has the objectionable feature of crowding the cells together, and irregularity of hatching, and also of mutilating the combs; but if the combs are patched with worker comb at the time the larva is cut out, it is not so objectionable, as there is no danger of the bees building drone comb; but we all know that, unless we are careful to give the combs to hives containing young queens, they will, as a rule, patch them with drone comb. When I followed that plan I had a great many combs with drone comb built wherever I cut out chunks of comb for larvæ, so I was glad when I found a better way. I have tried the plan Mr. Trego gives, when I have been pushed for cells, but I was always afraid to follow that up, as we are liable to have cells started on larvæ from an inferior queen. Unless they are well marked I am very apt to make a mistake; and to follow the plan successfully, all the larvæ around the cells started should be killed; but even then there will be many cells that can't be separated. And I also find that, to transfer a young larva of the right age (which is about one day after the egg has hatched) to a cell containing royal jelly two days old, the bees often clean out the jelly and commence new. I have never tried giving a larva of about the same age as the one in the cell containing royal

jelly; but I don't think any larvæ will make as good queens as the ones a day old. I think I shall experiment a little by transferring larvæ of about the same age as the one imbedded in the cup, say after it has been fed two days. With the wax-cup plan I often take the head of a wire nail and insert it into cups of royal jelly, and smear the bottom of new cups that have not hung in a hive, for the bees to glaze, and place the larva in it, and the bees generally accept about the same percentage.

Now, friend Root, all of our plans will work well when honey is coming in freely; but when the season is over, and we have to rear queens out of season, as I do the year round, we had better have a true and tried plan. I buy black and hybrid colonies every year when I can get them; but I supplant the queens as soon as possible, or make nuclei of them. If I have any drones in them I transfer them and place an empty hive at the bottom, with a queen-excluder on it, and above that another empty hive to receive the combs. I then cage the queen and shake all the bees off in front of the hive, and put the frame into the top hive, and then place the queen on top of the frames, cover them up, and the next morning remove the bottom hive, after stopping it up so that no drones can get out, and then we can have a drone-killing or drone-perishing, as suits the fancy.

This is the poorest season we have ever passed through here. I am glad to see encouraging reports, even if I am not in it. To tell the reason would make this article too long; so I will write some other time and tell how I manage my bees and queen-rearing department during a poor season.

VIRGIN VS. LAYING QUEENS FOR GOING THROUGH PERFORATED ZINC.

I will answer Dr. Miller with regard to virgin queens going through excluders, that laying queens, even if they can go through, are not disposed to do so. My experience is, that a virgin queen that hatches in an upper story without brood, and, better, unsealed brood, will, as a rule, find her way through the excluder, and in a few days a fine laying queen will be supplanted. I lost two or three very fine queens this year that way. It nearly always happens that, when a young queen happens to hatch among the bees, she kills the old one; which proves to me that queens do not always depend on the bees to do the killing. I am surprised at the two queens being alive when they arrived at your place. They would always fight when they got together, for me. I am always careful not to expose them to each other. Last year I had an imported queen which you ordered for me. She was introduced safely into a colony that I had had at cell-building. She had begun to lay, and in a day or two I opened the hive to take a peep at her. The first thing I saw was a nice little virgin queen. I was satisfied, without looking any further, that my imported queen was killed, and, sure enough, I found her on the bottom-board, apparently very recently killed. If a virgin queen gets into a colony of bees with a laying queen, the bees will do the work; but when the queen is hatched in the hive, and has been crawling about among them for two or three days, she will nearly always kill the old queen. I think that, perhaps, the old queen can squeeze through as small an opening as a young one; but they will not make such persistent efforts. J. D. FOOSHE.

Coronaca, S. C., July 8.

[We will explain to our readers, that Mr. Fooshe is our Southern queen-breeder; and while his name does not appear in the advertising columns, nevertheless he is one who rears the larger portion of the queens we sell early in the season, and a considerable number later on. When it comes to the rearing of untested queens we find that our Southern breeders can rear them cheaper than we can here in the North.]

WILLIE ATCHLEY.

THE MOST EXTENSIVE QUEEN-BREEDING BOY APIARIST IN THE WORLD.

The subject of this sketch was born in Sparta, White Co., Tenn., Nov. 22, 1876, and came with his parents to Texas in the fall of 1877. He walked across the house at the age of eight months. At the age of five years he drove a delivery-wagon to any part of the city of Dallas. He has been brought up in the bee-yards, and does not know when he learned to manage bees, but has *grown* into the business. He is to-day, so far as we know, the best queen-raiser of his age in the world, and the best

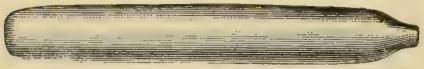
WILLIE ATCHLEY.

posted in bee culture of any boy of his age. It is a knotty question indeed that he can not properly answer about bees. He has raised thousands and thousands of queens, and by all the methods known to most bee-keepers. He says he liked the Doolittle plan better than any thing else up to this present season, but he has discovered a new plan that he likes better than any yet tried. He says that the Alley plan is no surer way to get cells than the Doolittle way, as neither is a fast and sure way; but at certain seasons he can get the bees to accept and finish up nearly all the cells by the

Doolittle method. He says that the bees will destroy just about as many of the eggs and little larvæ of the Alley plan as they will fail to accept of the Doolittle plan; and having so many cells to start, and at times when they were most needed, the bees would not save as many as he wished. So he has been all this year working to get a better way, and has found it. His own description is as follows:

Mrs. Jennie Atchley.

Dip the cells the same as by the Doolittle way, but leave the lower end of the cell-dipping stick the same size as the bottom of a worker-cell, an eighth of an inch; then let the stick be the size of the inside of a natural queen-cell up, say, about half an inch, like the cut. Now dip



WILLIE ATCHLEY'S CELL-CUP STICK.

the cells and it will leave a little hole in the bottom of the cell-cup an eighth of an inch deep. Now have your breeder lay in a comb that bees have hatched in; two or three times is best; and when the eggs begin to hatch into larvæ, say when about 10 to 24 hours old, then cut out a piece containing as many larvæ as you think you will need. Take a knife as sharp as a razor (I use a razor); pare down the cells just as low as you can and not disturb the larva. Now, just about as fast as you can move your hands, lift out the cocoons and place them in the bottom of the cell-cups in the little pit made for them; and if your stick is made just right, the cocoons will fit snugly enough to stay firmly.

When properly put in, the lining will just come up even with the bottom of the cell-cup proper. You see, the larva is not moved nor touched, and will live several hours without attention from the bees should they fail to see to them at once; while by the Doolittle plan of moving larvæ and putting in royal jelly the little larvæ sometimes dry up before the bees feed them, or they come so near starving that they get a setback which they never recover from. I am getting as fine queens as I ever saw by any process, and the bees always take care of them better than by the Doolittle plan.

Of course, I do not claim that the bees save them all, as I have seen bees destroy part of the cells that they had started naturally, so they are going to have their own way about it; but they save as many as two-thirds, and often all, for me, by this method. You see, the food the workers and queens eat is practically the same for a while, and possibly all the time, for aught I know; but the queen gets more of it, and thicker, when she is old enough to use it. So it makes no difference about the jelly; but I try to get larvæ that are well fed, as the bees seem to like them better. I tried cutting out the base or bottom of new comb, and placing in cell-cups, but was not very successful; and, in fact, I was puzzled to get tools sufficient to handle my cocoons, till Mr. Root sent us some long sharp-pointed tweezers to pull bee-stings with; and you ought to have seen me jump and grab them as soon as I espied what they were for. We were not looking for the tweezers, as Mr. Root had not told us he was sending them. We now have four pairs of these tweezers, as we ordered more from Mr. Root at once.

I have combined the Alley plan, the Doolittle plan, and my plan; and together I have the best, fastest, and most scientific plan I ever saw. Why I say I have combined all three is, I take a colony of bees that have lots of young bees, and take their brood all away, and keep them shut up on frames of honey, and no brood or queen from 12 to 24 hours; then give them a lot of my cell-cups placed on the combs by sinking the cells into the comb enough to stay firmly; and you ought to see them work them out. I get better cells, need no royal jelly nor cutting of strips of comb; and if you want to try the best plan to raise queens, and lots of them, send to A. I. Root at once and get you a pair of tweezers that is already just right, as he has every thing anyhow—at least, every thing bee-keepers need; then go to work and raise all the cells you want, and on a large scale, if you wish, as, with bees enough, you can raise any amount. Willie Atchley.

Greenville, Texas, July 7.

[Friend Willie has made a most important and valuable improvement on the Doolittle method. The actual improvement, however, consists in the *method* of transferring the larva and milky food without disturbing either; and the idea of cutting down the cocoons to ⅛ inch deep, so as to pick up, by means of tweezers, the little cups, as it were, containing larvæ and milky food, and pushing them into the artificial cup, is quite ingenious. Such an invention (and it is practically such) would do honor to a boy of very much older growth. We have no doubt that our friend Willie has had very much more to do with queen-rearing than any other boy of his age in the United States or any other country. We are very glad indeed to make his acquaintance, and hope he will let us hear from him again, regarding any further developments respecting queen-rearing.

The cell-cup stick, the one which Willie had found by actual test to be just right, was forwarded to us, and we instructed our engravers to make a cut showing it full size, and as exact a representation as it is possible to make. If you wish to make cell-cup sticks like Willie Atchley's, follow the engraving and you will not get far amiss.

In regard to the tweezers, perhaps we should say that we employed the Atchleys to extract 10,000 bee-stings. As we were short of bees when the order came, we thought our friends in the South could do it cheaper than we; and it seems that Willie was given the task. On one or two occasions we have done the work here at the Home of the Honey-bees. Our method, and the one that Willie followed, was to take two pairs of tweezers—one with fine points and the other with coarse. The operation of extracting the sting is as follows: The bee is grasped by the thorax, with the coarse tweezers. Just before the fine-pointed tweezers pull the sting, the other pair crush the bee, killing it instantly, and so on the operation is continued. These 10,000 stings are made into a medicine called *apis mellifica*, and it is regarded by the new school (homeopathic) as a very useful and important medicine. It can be obtained only by the means above described, by an expert bee-keeper.]

TREGO'S METHOD INDORSED.

CAN THE NATURE OF THE BEES THAT RAISE THE CELLS BE IMPARTED TO THE INMATES OF THEM?

The plan of starting cells as Mr. Trego describes, page 528, is old, but it's the best, according to my judgment, there is. It goes far ahead of the Doolittle plan of wax cups. I have used this way ever since it was given out that queens could be raised in the upper story over a full colony, and with a laying queen present. My way differs only in this respect from Mr. T.'s: I do not take the trouble to transfer the

brood, but keep enough breeding queens in strong colonies to supply strips of brood, so that, when the cells are started, and 48 hours old, they are, just as they are, with bees adhering, placed over a queen-excluder in the top story of a strong colony, to be finished. Now, I believe the nature of the bees that raise the cells can be imparted to the inmates of them. I know you can have whatever color you want by observing the color of the bees that raise the cells. That the above method of raising cells is good and almost entirely successful, you know from the splendid queens I have sent you during this season.

Now, what's the matter with the Good candy, for shipping queens on? When shall we ever learn to leave "Good" enough alone? A candy or feed that we can ship queens on any distance, and any reasonable time, ought to be let alone, at least for a while longer. What's the use of fussing with water-bottles, etc., when we have only to make the candy a little softer or harder, as to the distance they are to go? With the partition that holds the candy well waxed and covered with waxed paper, it stays where you put it, without any danger of soiling the mails. W. J. ELLISON.

Catchall, S. C., July 18.

MRS. HARRISON'S LETTER.

KEEPING COMBS IN THE CELLAR.

I arrived home from the South on the 5th day of May; and other more pressing duties occupied my mind than the apiary until the 23d day of May, when I went to work there. I found that just half of the colonies were dead, and I undertook the disagreeable task of saving the combs and cleaning the hives. They had passed the winter upon their summer stands, protected with chaff cushions in the upper story, and none of them had died of starvation.

It was so late in the season that the moths were hatching, and I removed all of them that I could; and as fast as a set of them were ready I put them back into a clean hive and carried them down cellar. After the combs had been in the cellar a week I examined all of them carefully, when the sun was shining brightly through the cellar window, and I picked out all the grubs of the moth that I could find, with a long sharp darning-needle, and all cocoons. The combs that had moths in them were put together in hives, and used for the first swarms that issued. In a week the operation was repeated, and a few that had escaped were removed. In another week they were examined, and not one found; and as the cellar windows were covered with wire gauze, and there is no outside door, I feel safe in saying that the combs will be safe from being destroyed by the moths during the remainder of the season, and no cocoons were allowed to mature. If the hives had been cleaned as fast as the colonies died early in the season, the combs would not have needed so much attention. Keeping combs in the cellar, to prevent the ravages of the bee-moth, is the best and safest way that I have ever tried.

SHADE FOR HIVES IN FLORIDA.

When I was visiting the largest apiary in the State of Florida, owned by Alderman & Roberts, Mr. Roberts (who is the practical apiarist of the firm) said, "The colonies that do the best are those in the shade of those oaks; and when those oaks are larger, I intend to put more colonies there." The oaks spoken of are what are called scrub-oaks. They are deciduous, and, if I am not mistaken, never attain to a large size. Bees in Florida rear brood all winter, and need the sun for warmth. If they are not strong to work upon the early bloom they will gather no surplus. The "winter of their discontent" is during the hot summer months. The bees of this firm at Wewahitchka were under sheds with upright roofs, and had rows of colonies at each side. Judging from what I know of the climate of Florida, I think that Mr. Roberts is correct, that colonies will be more profitable if located under trees than under sheds; and better still if they were not shaded at all during the winter. MRS. L. HARRISON.

Peoria, Ill., July 10.

WAYSIDE FRAGMENTS.

BY SOMNAMBULIST.

In our issue for June 15 we referred to the very spicy series of articles now running in the *Progressive Bee-keeper*, under the title of "Wayside Fragments," by Somnambulist. In order that our readers may have an idea of what they are, we reproduce the article as it appeared in the issue for July 1:

Not long since, in speaking of a deranged lady, our colored help exclaimed: "Fo' de Lawd, jes' aftah she's done had one of her wildest tantrums, she will sit down to the pianny and *impose* the beautifullest music you ever heerd in your bawn days!"

The thought just then occurred to me that I should not *impose* on the powers of endurance of the readers of the *Progressive* to the extent that I did last month. So, when your eye meets "Wayside Fragments," don't throw the paper aside in disgust. Here is a chance to cultivate your charity. I do not wish to be the *only* one who peruses "Fragments." "Misery loves company," and, besides, there is one subject herein mentioned to which I wish you to give your serious attention. Moreover, please remember the good old text (never understood its meaning better than now), "Blessed are the merciful, for they shall obtain mercy."

I was pleased to see A. A. Baldwin step out of his seclusion and throw the gauntlet to Doolittle. It takes courage to attack such a *big* man (in more ways than one), and wouldn't it be fun to see two such lock horns?

Now, that's just what we want in the *Progressive*—display of enough spirit to take your own part, defend any pet theories or plans of manipulation; may be you have been practicing lo, these many years, yet always kept your light under a bushel. Pray don't be so exclusive; usually it does not pay. When you have a good thing, let's hear from you. Let your light shine. It is not necessary to advertise one's troubles—a man having crooked legs should never wear striped pants—but reported failures often serve as a beacon from a lighthouse, to warn others, drifting in the same direction, of rocks, shoals, or other dangers ahead.

All of us want to learn. No man is more to be compassionated than he who is satisfied with himself.

Did you ever! For the past six or seven years there has lived one of the most progressive, intelligent, and successful bee-keepers in the United States, within four miles of the Home of the Honey-bees, and we didn't know it.—E. R. Root, in GLEANINGS (June 15).

And E. R. Root went hundreds of miles to obtain pointers from prominent bee-keepers, with this unknown one at his very door, as it were. Aye, there's the rub! But perhaps in this case he wanted the trip any way—that bicycle had to be tested, you know. However, in the majority of cases our journals have to draw upon the talent of neighboring and distant States, while *plenty* of it can be found *right at home*, if it could only be resurrected from its burialplace.

How many are trying any of the new non-swarming devices, and from how many may we expect to hear at the close of the season? Don't wait to be insisted upon. It isn't exactly manners, and *can't* won't figure; for if the agent, *Will*, is brought into play, the giant Can't usually has to take a seat very far in the rear, or vanish entirely to parts unknown, so that, after a marvelously short period, we are led to exclaim of these very writers.

"True wit is nature to advantage dressed;
What oft was thought, but ne'er so well expressed;
Something whose truth convinced at sight we find,
That gives us back the image of our mind."

I might go on and preach a sermon a yard long, and what results as regards arousing this latent talent? If you "vill," you "*vill;*" but if you "voont," you "*voont,*" just like the Dutchman when he avowed, "I vill not be convinshed except by my own convinshun."

Seeing that bee-keepers observe the weather changes so much more attentively than any other class of people, would it not be mutually advantageous for them to occupy the positions at the various meteorological stations?

Pretty cute plan, that of Frank Coverdale (see *Review*) of preventing after-swarming by the use of the Heddon plan and the bee-escape on the otherwise closed entrance of the old hive, whilst it remains near the old stand.

Now is the time the average farmer bee-keeper is after the specialist red hot for "just a few of those patented hives." Wonder if it wouldn't pay to keep a few nailed up for this purpose.

What of this?

If honey is adulterated, charge the blame to the extractor; this has made it possible; it is one of the inventions that never should have been invented.—A. C. Tyrrel, in A. B. J.

Where is the army of extracted-honey producers? To the front! Forward, march! and march right on to this A. C. Tyrrel, and anhihilate him, or, rather, this doctrine of his. If because, along with honey, a thousand and one other things can be adulterated, would the world have been better off had it never known the articles? For a single instance, milk, the first sustenance of man. Bah! Too thin! Too much chalk and water about that kind of reasoning. Give us something pure and unadulterated.

Here is another from "Stray Straws:"

That genial German, C. F. Muth, with his usual persistency, has succeeded, as reported in A. B. J., in getting freight rates on extracted honey the same as on syrup, instead of 40 or 50 per cent higher, as heretofore. I don't know just how much territory is covered by this ruling."

Just like that exasperating Miller. Somebody please be a little more charitable and furnish the very much desired information on this subject.

"The worst spring here in thirty years," heads "Stray Straws." Lots of company, Doctor. Never have we watched so faithfully for the clover bloom. Want, oh so badly! to attend the Chicago meeting October 11, 12, and 13, but that has no effect on the clover. Entirely too shy as to putting in an appearance, either as to date or quantity. Quality also lacking.

"Will bees really build up faster with daily feeding in spring than without it, providing abundant stores are in the hive?"

Don't all speak at once, assuring us you "don't know," but somebody who *does* know please tell.

June 1st GLEANINGS gives Aikin Bros. & Knight's system for the prevention of swarming by transferring every few days the field forces of two colonies from one to the other by inversion, and June 15th the new Bingham smoker, with reversed bellows, wire handle and curved nozzle. These improvements add much to the value of the old Bingham.

E. R. Root speaks of cleating the bellows-boards of the Crane smoker, to prevent warping. It will also add to their durability. The first breakage about a smoker, with us, is the splitting of the bellows-board immediately beneath the fire-box. Of course, this is due to careless handling, but is it always possible to have careful hands?

What's to prevent me having one of those Crane smokers? I am very willing to promise never to use tobacco *again*. But may be he doesn't send out the Crane on those terms.

GLEANINGS has concluded the white of an egg decidedly detrimental to candy for queen-cages. Confectioner's sugar and first-class honey are the best, the honey being the real food-element which sustains life.

Thanks to *American Bee Journal* and GLEANINGS for kind expressions regarding "Wayside Fragments," and please accept an apology right here. Friend York, I hope you, nor any one else, ever entertained the idea that I was so conceited as to imagine that I could walk around in my sleep and gather items of interest for the bee-keeping public.

To my first article I simply signed "Sleepy Head;" but ye editor, probably wanting some high-flown name, and still more probably *not* wanting any sleepy heads among his correspondents (they and progressive being antagonistic) substituted "Somnambulist," and that's the way I became so christened; and as I have borne the cumbersome name this long without serious damage, I live in hopes of surviving.

Friend Root, if the similarity of which you spoke has an existence, then 'twas born out of my admiration of those men's writings, and is highly illustrative of the influence we possess over each other. I sincerely hope they will not feel that it detracts in the least from their honors. But as for the other sentences sounding "like *no one else,*" they certainly sound like me.

This kindness from both of you carries me back to childhood's days when we sang,

How sweet to have earned
The blest recollection
Of kindness returned!

And while on this subject, permit me to add that that bee-keeper's benefactor, Bingham, seeing I was still traveling in the same old ruts with a smooth road just alongside, gave me a delicate hint as to where I was, by sending me a wire handle and a detachable curved nozzle for my old-style Bingham smoker. Thanks.

Such hints are duly appreciated; but oh, the dissension such small things can create! You remember that wielder of the Conqueror I told you of. Well, she was determined to decorate her smoker with them, and I—oh, what's the use for a man to say what he wants, when there's a woman around who will have her way? She probably laughs in her sleeves at the advantage she now has over me every time my smoker concludes to fall to pieces, or refuses to do business longer for want of ammunition.

By the way, those suggestions from Marion Miller seem to be good. What is more aggravating than for the cone to fall off, and always just at the time when we most need vigorous work?

There never will come a time when broad fields of knowledge will not be open to every progressive mind, and there never was a time when more opportunities for improvement were offered than are now presented. Error must ultimately be overcome; but as long as it exists, it retards progress and lessens by so much the happiness of the world. Therefore, we all rejoice in the fact that Michigan is to have an experiment apiary, and that it is to be in charge of such competent hands as those of R. L. Taylor. This fact insures success.

Doesn't it seem as if Friend Hutchinson, and through him the *Review* readers, had "struck luck," inasmuch as the reports are to be given to the *Review?* With us, there is but one discordant feeling mixed with this gladness; and that is, a feeling somewhat akin to jealousy that Michigan is to be *so much* more highly favored than her sister States. Accept our congratulations and very best wishes.

What do you think of extracting honey at the rate E. France says he does? (June *Review.*) He goes six to eight miles from home, extracts 2000 to 3000 lbs. per day, one doing the extracting and one the uncapping, and another overseeing nine men keeping every thing running smoothly. I fell in love with E. France years ago; but just think how he works that uncapper! Doesn't it seem as if he should be handed over to some humane society?

In some localities having an abundance of either or both black or honey locust, bees have bred up surprisingly.

I think, with Friend, Pond the danger attending the introduction of queens is greatly over-estimated.

Friend Flanagan, how much I desired to see a date somewhere attached to your article, after reading the first sentence, but failed to find one.

Bro. DornBlaser's eulogy on J. W. Rouse could not be improved, and we all feel a pleasure in knowing it to be well merited.

What about that promise in the beginning? Oh, yes! Au revoir. SOMNAMBULIST.

Naptown, Dreamland.

Whoever you are, Bro. Somnambulist, we extend our right hand of fellowship, and hope you will continue on with your "somnambulating."

I bought one of those Crane smokers of you five or six weeks ago, and have used it constanly ever since. It gives excellent satisfaction. I run my smoker 10 to 12 hours a day, and it is run full blast.

New Smyrna, Fla. A. F. BROWN.

FAX.

One colony with proper attenshun and management will yield more honey and net more money than a dozen left to shift for themselves.

When a queen is ready to gnaw frum the cell,
And gittin' quite ripe, sometimes it is well
To help her climb out; but then, I have seen
A waste in the haste of pullin' too green.

Have tested bottom-boards with and without paint. I think it decidedly the best to give 'em a good primin' coat of white lead—they haint so apt to git warped er kracked.

It don't pay to use unfinished sexshuns left over from last year's krop. The bees will put first-class honey into a fourth-rate receptickle; but kustomers at large won't give a gilt-edged price for the same.

Some one sez that a bee-sting is
Mity good fer the rumatiz;
And I konfess, fer a little bit,
It does make a feller git up and git.

A few days before swarmin' time a layin' queen usually slacks up a little on account of room, and grows sum smaller, so that, when the bees swarm, she frequently gits a hustle on her equal to a vargin queen.

Found a yaller-jackets' nest last week, a small one, made of a kind of paper, and in the form of a hen's egg. The outward shell enclosed a disk of paper cells standin' on a sort of pedunkle. The queen was yaller, and performed 'bout like a Italyun queen. She was four times bigger than the single worker that was with her.

Heard a farmer say one day,
That he 'lowed the bees would pay
On his farm—liked honey so;
It and buckwheat cakes 'd go
Awful nice; but one drawback
Skeered him out—bees had a knack
Of just makin' the fur fly
When he happened to pass by
Whare they wuz; and wouldn't tend
To 'em fer that "bizness end."

ELLERY KRUM.

THOSE OLD BEE-BOOKS.

ANOTHER PEEP AT THE "GOOD OLD TIMES."

We are now through with all of the bee-books printed before 1700, and are ready for the next one, printed in 1749, during the reign of George II. This makes a skip of 70 years after Rusden's book was published, as noticed in our last. In this interval Sir Isaac Newton lived and died. The great impetus given by Newton to the manufacture of lenses put the world ahead with mighty strides in the study of insects. In 1685 Stelluti published a description of the parts of a bee which he had examined through a microscope. In fact, as soon as this instrument became of practical utility a complete revolution in human ideas took place in regard to bees and other insects. The rapidity of this change is strikingly noticeable to one who reads the books of those days in the order of their appearance. If we take that portion of time included between the writing of Butler's Feminine Monarchy, 1609, and the death of Lord Byron, in 1824, we find a succession of English names so numerous and brilliant as to be absolutely astounding. In that list we find Shakespeare, Milton, Newton, Herschel, Bacon, and Davy. England also received a mighty impulse in the arts and sciences when so many people, of the very flower of a nation, were driven from France by the revocation of the Edict of Nantes, in 1685. I allude to the expulsion of the Protestants. Well, why do I mention all this? Simply to account for the wonderful advance in bee-literature at the time of which I write—1750. And as I write those figures I am reminded that Huber—the immortal and glorious Frenchman—was born on the 2d day of July of that year. Besides, it is well, at times, to take a brief view of the history of our ancestors, and see the difficulties which they encountered and obstacles which they surmounted. The cobwebs of ages hung over England in the time of Butler, in matters which were purely scientific. Even the rotundity of this globe was not then universally accepted as the true theory. I believe, furthermore, that bee culture will be none the less attractive when we know its history.

The book in question is entitled "The True Amazons; or, the Monarchy of Bees." It was printed in that celebrated hot-bed of literature, Paternoster Row, London, in 1749. By the way, I wish some of our English readers would tell us something about that street as it is to-day. The author's name is Joseph Warder, a physician of Croydon. Somebody has written on the flyleaf, "Very rare and curious." That is true. The book commands respect as soon as one has read a page. The part devoted to bees contains 163 pages, nearly the size of this. It is dedicated to the queen, probably on account of the fact that Warder must have despised such a contemptible man as George II. is known to have been. When this royal figurehead heard of the death of his father, George I., he exclaimed, "Dat is one pig lie!" I suspect Warder feared the king would say that of this book, especially where the queen is spoken of as a female. What England owes to her queens for what they have done that was good, and for the evil they have prevented, is ahead of my arithmetic.

In Rusden's book, mentioned in my former article, he makes out that all bees are fertilized singly by the *rex apum* (king bee). Mr. Warder himself speaks of the workers as being true females, and of laying eggs in the spring. He demonstrates by actual dissection that the drone is a male, and that its use, aside from paternity, is to keep the eggs warm by sitting on them! The use of the queen, in his opinion, was simply to give orders, and be a lady. He makes no mention of her egg-laying propensities. He speaks of the loyalty of the bees toward the queen, and tries to shame the British for their intense dislike of George II. by telling them they should be as loyal as the bees. What George ought to have been as a king is not mentioned. He says that many of the absurdities which Mr. Rusden "imposed" on the world were the result of following the "silver-tongued Virgil," as he calls him. That's right. Virgil was a perfect ignoramus in regard to the habits of the bees. Our author says of him: "Though Virgil was a great poet, in treating of bees he writes more like a poet than an experienced bee-master." Again: "Honey putrefieth not; but by its conservative virtue doth prevent other bodies from putrefaction." This property of honey was well known to the Egyptians, who used it, we are told, in embalming. Again, Mr. Warder says: "Eggs are laid only in the middle cells, while those all around the hive are reserved for honey—nature, or, rather, the God of nature, having taught the bees that, if they should cast their eggs near the outside of the hive or box, there would not heat sufficient come to hatch them." That sounds as if frames were not used. Mr. Warder is opposed to the killing of drones, and says it is as foolish as for a man having ten rams and a thousand ewes to kill the rams in order to increase the flock. That would be a more forci-

ble illustration if the male sheep made a practice of sitting on spring lambs to "keep them warm."

The enemies of the bee are mentioned as the moth, mice, earwigs, hornets, and wasps. The part on bees winds up with very "full" directions on how to make "old budge" out of honey. They called it mead, and equal to the best Spanish wines.

The second part of the book consists of 200 pages in refutation of the papal dogma that communion bread is the actual body of Christ and not symbolical of it. The author is Edward Lewis. He handles the subject in a masterly way.

The third part of the book is "Directions to the Clergy of London, in 1724. Amen Corner, London, 1738." Aside from its special bearing, I wish that those who do so much toward rendering the Bible unattractive by their wretched reading of it could read what the author, the Lord Bishop of London, says in regard to reading sacred words. This one book, or three in one, is certainly one of the most unique and interesting I have ever examined. W. P. R.

Medina, O., July 24.

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

THREE COLONIES 15 YEARS OLD.

I have three colonies that are 15 years old. They are in two-story L. hives, 20 frames. There has not been a frame moved in those hives for that length of time. They winter in a shed, packed in straw and chaff, with sealed covers, air-tight. I have had as many as 160 lbs. of comb honey from each in a good year, and not less than 30. F. P. CLARK.

Parkman, Ohio, July 9.

AN IMPROVEMENT ON THE HEDDON METHOD OF TRANSFERRING.

Friend Root:—I notice in several late numbers of GLEANINGS references to the Heddon method of transferring. I wonder that you should have overlooked or forgotten that there is a still better method, which allows the whole transferred colony to remain together, while the brood is hatching out of the old combs. It was published in the *American Bee Journal* of 1891, page 386. I tried it that year with perfect success. You may remember that I got some all-zinc perforated honey-boards from you, which I used for this purpose. Others, here, have borrowed my honey-boards and used them for this way of transferring.

WM. MUTH-RASMUSSEN.

Independence, Cal., July 14.

HOW DID THE QUEEN GET OUT?

I am reading your books on bee culture, and like them very much. Now, I wish to know if I haven't discovered something new. I had a queen-cell about to hatch out. It was a novelty to me, so I watched it every day. On Saturday it had not hatched. On Sunday it was hatched out, but I did not find the queen. On Monday I looked again, and found that the queen-cell was all nicely sealed up again. I looked for and found the queen. I then cut out the queen-cell and cut it open, and out popped a worker-bee and flew directly to the hive. How came the worker in the cell, and sealed up after it had once been occupied by a queen? Did you ever hear of such a thing before?

Delhi, Wis. C. F. APPLEY.

[This sort of thing has been mentioned before. You will find it spoken of in the A B C of Bee Culture, under the head of "Queen-rearing." The fact was, the young queen hatched out, and, as young queens often do, she gnawed the cap of the cell nearly off, leaving it hinged on one side. She crawled out, and in the mean time the worker-bee crawled in; the cap fell back into position, and fitted so tightly that a casual observer would never think it had been opened. But the bees go on and seal up the cell tight. If you observe closely those cells from which queens have just emerged you will find that the cap resembles somewhat the cover of a coffee-pot, hinged on one little narrow edge. Sometimes these caps are gnawed entirely off, but oftener not.]

A MESSAGE FROM THE STARVING IN INDIA.

In our issue for Aug. 1, 1892, we spoke of starvation in India, and gave a picture of some of the sufferers. Contributions came in to a moderate amount—nearly $35.00—and that amount, together with our own, was forwarded to Mr. Van Allen, and here comes his report:

To A. I. Root, Esq.:—I have just now received the inclosed note from one of our native pastors, to whom I had sent $3.00 of the money which you were so good as to send me for the relief of those suffering from famine in our district. I send it to you, as I know that it will be an item of perhaps considerable interest. The money which you, and others with you, kindly sent me, has principally been expended in buying rice, and giving out to our poorer native Christians on Sunday, in our churches, at the close of worship. FRANK VAN ALLEN, M. D.,
Medical Missionary, Madura, So. India.

Below is the letter from the native pastor, mentioned above:

Rev. and Dear Sir:—The people who were fed by the money which you were good enough to send to me, thank you very much for your kindness and care toward them. For the ten rupees I bought 60 measures of rice, which gave one good meal for 240 people. Some of those that received help said that Christianity is the best religion because it cares for others. Yours obediently, Y. J. TAYLOR,
Native Pastor, Aruppukotti Station,
Madura District, South India.

The letter above refers to only $3.00 of this amount, and that sum gave a good meal to 240 people—just a cent and a quarter a meal. Now, does it not seem, dear friends, that, with wheat at only 50 or 60 c. a bushel, the United States of America ought to be able to come at least pretty near stopping absolute starvation anywhere on the face of the earth. Of course, we have got to have railways and other means of travel to carry supplies speedily to the suffering ones of the earth; and it just now occurs to me that the modern wheel may play a very important part in this labor of love; and I think I should enjoy ever so much more carrying wheat to starving people, on a wheel, than even running the mail up to the postoffice so as to give our patrons prompt returns and responses. May God bless the efforts, and help us in seeing to it that nobody is starving to death in this whole wide world of ours.

REPORTS ENCOURAGING.

Bees are booming. F. F. MAIN.
Newton Falls, O., July 5.

Bees are doing well on basswood.
Hastings, Mich., July 9. F. S. CLARKE.

My bees are fairly piling up the honey this year. Some years ago I ordered some shipping-cases, but never had any use for them until now. WM. BALLANTINE.

Mansfield, O., July 1.

My bees will average over 125 lbs. of comb honey this year. How is that?
Syracuse, N. Y., July 7. H. E. HESSLER.

The honey crop in this section, so far this year, is immense. S. F. NEWMAN.
Norwalk, O., July 7.

I have taken 96 one-pound sections from No. 46, and still it comes. T. M. MOLTZ.
West Fairview, Pa., July 10.

Bees are booming here. One hive fills 6 crates; 7 five; 7 four; all white clover and some linn. I shall have two tons this year.
Montpelier, Ind., July 12. W. B. WEST.

The bee-keeper should wear a broad smile, and be thankful this year. Bees are working in second and some in third tier of sections. Basswood just begins to open here with us.
Parkman, O., July 8. F. P. CLARK.

I never saw white clover blossomed more profusely, and there is more honey in it than there has been for four years. Basswood is budded very full; but being disappointed the last three years, I dare not let my hopes run too high until I see what we get.
E. R. A. BRAINARD.
Postville, Iowa, July 9.

OURSELVES AND OUR NEIGHBORS.

For the preaching of the cross is to them that perish, foolishness: but unto us which are saved, it is the power of God.—I. COR. 1:18.

Mr. A. I. Root:—On page 488, June 15, you quote your proof-reader as saying: "Christianity is accepted and taught in our colleges, where the highest order of intelligence and virtue prevails." To which you add: "And, of course, our colleges teach and advise prayer to God. If the highest order of intelligence in the world accepts prayer as a real power in this world, what shall we say?" This seems as much as to say, that, if a number of college professors are Christians, and teach Christian doctrine, then, of course, Christianity must be a truth. (I say "a number," for it is certain that not all the learned men in the world are Christians, but that many of the greatest thinkers that ever lived and are now living have been and are unbelievers.) Following this line of argument one could say that, as the wise men of ancient Greece and Rome, in which countries "the highest order of intelligence" once prevailed, believed in and taught their respective pagan religions, then, of course, they must have been truths.

Again, on page 489, you say, in reply to Mr. R. H. Randall, that God originally made the Devil a good being, and that he made himself bad. Now, I should like to ask you a question: Is your God all-knowing? If he is, then he knew, when he created the Devil, exactly how he would turn out. If he did not know, and if he is almighty, why did he not kill the Devil when he found out what a lot of mischief he could do? Yours for truth,—
Yorktown, Tex., June 28. ROBT. WESTPHAL.

Friend W., in regard to the first part of your argument, I would suggest that the intelligence of the present day is at least a little in advance of that of ancient Greece and Rome, especially when, we are told, it was "easier to find a god in Athens than a man." This age stands on the shoulders of all preceding ages, and hence can see farther. Surely you would not think of comparing the present age with the age of idolatry. Again, the fruits of the Christian religion are all round about us. I am tempted to drop this part of your letter by saying, "By their fruits ye shall know them." I will, however, cite one illustration here.

About the year 1820 a youth of 18 or 19 was passing along through the streets of London. He was a remarkably bright mechanic, and was employed at good wages in a factory where wood and iron work was carried on. In the evening, after his work was over, it was his custom to find recreation in various places of amusement. He had learned to drink, or was learning to drink, and could play different games of chance. He was on his way to a place of amusement, something like the beer-gardens of the present day. A Christian lady with whom he was well acquainted met him and urged him to go with her to an evening meeting. He did not like to give up the enjoyment he had planned for the evening, so he objected. She urged, and finally implored him to go with her just once. Out of good will to her, but without any idea that he should care for the religious meeting at all, he consented to go. The meeting was led by a returned missionary. In fact, he was one of the pioneers in the work of carrying Christianity and civilization to the cannibals of the South Sea islands. Before young Williams knew it (for it was indeed John Williams himself), his whole mind and being were absorbed by an account of the great work that needed somebody to give his life to it. Before the meeting closed, his mind was made up. That one little circumstance of yielding to the lady's entreaties was the turning-point in his whole life. He never visited another drinking and gambling place in his life. He went to work quietly and patiently to fit himself to go to the South Sea islands as a missionary. I wish I had space here to tell you of his subsequent history, which reads more like strange fiction than stern reality. In a year or two he determined to start out. His employers offered him big wages if he would stay, as he was an exceedingly valuable man. But big pay was to him of no consequence. He had enlisted under Christ Jesus, who has said, "Inasmuch as ye did it unto one of the least of these my brethren, ye did it unto me." Let me give you a glimpse of what he did.

He rejected the advice given him, to educate himself for learning the language. He thought it would take too much time. He had made up his mind that he could learn the language of the people by a short cut of his own, and he did it. He depended largely upon his wonderful skill in mechanics to make friends with the natives, and so he learned their language. Almost as soon as he got into the island he became a favorite. A crowd was continually following him, and looking on, as he exhibited his marvels of skill in building houses, boats, machinery, and every thing that was needed for their comfort and civilization. After he had been on the island only ten months he had learned their language so well he could preach a sermon to them in their own tongue. Let me tell you what more he did in just one year's time among savages, cannibals, and pagans. He celebrated the anniversary of his landing by having a Sunday-school picnic. At this picnic the children dressed as children had never been dressed before on that island. They carried banners, and on these banners were inscribed, in their own language, "We are the children who would have been put to death in our infancy had it not been for the gospel of Christ Jesus, which has come to us." At this point in the ceremonies the king himself arose, and begged permission to speak. It was an interruption to the program, but he said he must speak. With tears in his eyes he said something like this: "Dear friends, what the children tell you is true. I am now a childless old man; but God has, in time past, given me nineteen children in all. May God forgive me that they have been all put to death, as the

children have told you." He sat down with streaming eyes, and groans and tears convulsed the whole audience. What he said was indeed true.

Now, before I tell you more about John Williams, let me say to you, friend W., that it was the gospel of Christ Jesus that wrought that wonderful change in just one year's time in that island of Raiatea. Has any other religion, or what you may call religion, done any similar work? Has infidelity ever turned a single young man from gambling and drink, to a work like that? You need not answer *me.* Answer the question, each one of you, before God and in your own hearts. Do you know any thing like it? Let me now go on a little with my story.

As soon as young Williams had got the work established in this island—yes, even *before* it was established, he put the work into the hands of native workers, and pushed on to the next island and then to the next. The people embraced the new faith in a way that seemed almost miraculous. Instead of putting their children to death, and the old people too, they clothed and fed and cared for them as Christians do everywhere; and they were soon filled with a wondrous zeal to go and assist in the work of their leader in carrying the Bible and Christianity to neighboring islands.

Let me give you a little glimpse of Williams' discouragements. Somebody became envious of him, and the ship that had been at his disposal was withdrawn. He stated the matter to his native helpers, and told them that, with their help, he would build another ship right there on that island. The first thing he needed was tools; and he must have a forge and blacksmith's bellows. To make the bellows they killed the few goats that had been brought on to the island by a missionary ship; but during the night the rats, which infested the island in swarms, ate up his bellows—that is, the leather part. Then he went to work and made a bellows with a board moving in a wooden box. He made his tools, cut down the trees, hewed them into shape, forged the iron work, making his own nails and bolts, and actually completed a sailing-vessel inside of a year, that did missionary work for several years afterward. The man's energy, industry, and wonderful inventive powers, seemed almost miraculous. The kings of many of the islands were, of course, hostile, and forbade him to land or teach. In such a case his only resource was prayer; and in answer to prayer, these very savages and *pagan kings* became "clothed and in their right minds." They gave up cannibalism, and sat at his feet and were taught as little children, the people of their islands following them. Some of you may be tempted to believe these statements to be untrue. They are the whole facts, however, right in print, and are as well substantiated as the history of the Fourth of July in our own country. Since Williams' time, wondrous strides have been made in converting the inhabitants of the islands of the sea until cannibalism, infanticide, and other like hideous crimes, are now hardly known on the face of the earth. Every reader of Gleanings knows more or less of this work. The man who disputes the result of Christian work is about on a par with the man who would tell the child that the Fourth of July does not mean any thing, and that the stories about our independence are only fables with no truth in them.

Now in regard to your last point. I do not know whether you know it or not; but you are striking on one of the most difficult points for the finite human mind to grasp that has ever troubled the world. I am not a theological student; in fact, I do not exactly know what our doctors of divinity would say in regard to this matter. I am quite sure, however, they will tell you that this is only one of the many points which the human intellect seems inadequate to grasp. Suppose you had said to me, "Mr. Root, how far does space extend? Is there any limit to the number of constellations of the heavenly bodies that fill out space? If there is a limit, what comes next? how thick is that, and how far does it extend, etc.?" I can not answer; you can not answer; no living being can answer. We almost reject the idea that there is no end to space; and, in fact, I believe I have read somewhere that the latest investigations in astronomy show that suns and stars and worlds do *not* go on for *ever* and *ever;* that the best telescopes we have even now have probably caught a glimpse of all the stars there are in the universe. Well, that is a little comforting; but the comfort is short-lived, however, for the average Yankee wants to know what they *do* have when they have stopped having *stars;* and how far off is it through "nothingness" until we come to *another* plantation? Oh dear me! it makes one's head swim.

Well, now, the question you propound is, in some respects, a parallel one; viz., "How or why did *sin* come into the world?" And then, again, in regard to foreknowledge—*does* God know beforehand exactly how every thing will turn out? Now I will *try* to answer your questions. Of course, it will tax my intelligence and understanding clear to their fullest limit. As we grow older, certain questions seem to get a little clearer. I think I can compass some things now that I could not a few years ago. In the first place, does God know all the future? In one sense, I believe he does. But we may push this very idea to an extent where it becomes foolish and harmful. You have all heard of the same sort of reasoning, I presume, something like this: If God knows just how a thing will turn out, then, of course, it will turn out that way and no other. And then somebody stupidly adds, "What *is* to be *will* be, and it does not make any difference what we do; it will turn out all the same, any way." Now, this latter is about as stupid and foolish as any thing can well be in this world of ours. Why, just think of it! A farmer might say, "God knows whether I am to have a crop or not. It is decreed beforehand, from the foundation of the world; and if it is decreed that I am not to raise any thing, it will not make a bit of difference whether I work hard or not; so I might as well let the thing go." Such a man is crazy. His place is in the asylum; and if he does not get there, he will get to the poorhouse eventually. But I have actually heard men blame God the Father and God the Creator for their bad luck by just this line of argument. I once heard my good mother say she did not believe that God knew *every* thing beforehand. When I was about to lift up my hands in astonishment, however, she added, "At least, I do not believe he has any kind of foreknowledge that cuts off human *free will* and human *responsibility.*" You see, her *addition* to her first remark made her in line with the orthodox people of the world.

Friend W., the Devil is a free agent, like the rest of us. From the beginning he has been honored with liberty to do *good* or to do *bad,* as he chooses. God has seen fit to permit this kind of liberty, just as he has seen fit to give you and me liberty. If you feel like finding fault because God gives so much liberty, let us suppose he had created human beings that had not the power of sinning. I do not know just how he could have done it unless we were circumscribed or in bonds. A locomotive can not

run off across the country, because it is confined to a certain line by an iron track. The iron track is a good thing, but neither you nor I would like to be circumscribed in just that way. We should like to ramble over the whole universe. By his permission to ramble he places a responsibility upon us. We have to take care of ourselves and our bodies. If we were slaves in bondage, and had a master or a guardian to look after us, and see that we did not get into mischief, we might be spared from sin and crime; but our liberty—in fact, the very liberty we boast so much of in our United States—would be cut off. We like liberty. It is a compliment to humanity, that God has seen fit to give us liberty. But with this liberty comes the possibility of sin and crime. When helpless innocent women and children are called upon to suffer, it seems to us to be awful, and we are inclined to ask why God made humanity in such a way that the helpless and innocent are so often called upon to suffer.

A neighbor's little girl once suffered severely with the earache. Once, when the pain let up a little, she asked, "Mamma, do little girls ever die of the earache?" For many days and nights she suffered the most excruciating pain. Why does God permit such things? I can not tell. I only know that the world seems to be fashioned in this manner. The last word on the lips of this little girl was the little prayer that her mother taught her to say just before she went to sleep at night. She might have reasoned, after a childish fashion, that God had been so very cruel and hard toward her she would not say her prayer any more; but is it not far better—oh! a thousand times better—that no thought ever entered her childish heart that God *could* do any wrong, or make a mistake?

It may be hard for the human intellect to comprehend or compass the thought of *God's foreknowledge* and, at the same time, *free human agency*. Yet common sense tells us—yes, it tells even a child—that we are free to do right or wrong. If we do wrong, the consequences fall upon our heads; and it is through trial and discipline that we learn wisdom. In our experiment stations they have trial-grounds where they test things. In our grounds at Columbus, O., the soil on the rich river-bottom was *too* good for an experiment station. The farmers all over our State complained that the tests were not fair; and finally the experiment station was moved so that a part of it was on some of the hardest and poorest clay ground in the State of Ohio. The old farmers wanted our college boys to try their hands and make experiments on some of the poor and unpromising soil of the State. They were right.

Now, if God had decided to have this world of ours a trial-ground to let us fight our way through, and thus bring out the best there is in all of us, could he have planned it very much better? I have told you about a time when our Medina schools were so very bad that Mrs. Root questioned the wisdom of letting our boy go to school. Should we keep him at home? By no manner of means. A boy kept out of school would be like a potato grown in the dark. Let the boy *go*. But talk to him; encourage him, and explain to him the evils he must encounter, and *fortify* him so that he will come out unharmed; then go to work and help the teachers. Exhort, entreat, and *fight*, if nothing but fighting will do the work, until you fight the filth, obscenity, and blasphemy *out* of the school. Now, if you will promise not to think I am boasting, I will tell you what the superintendent of our schools said a few days ago. He asked me if I remembered, when I was on the school-board, of going through the schools and exhorting the boys on the subject of profanity, obscenity, cigarette-smoking, etc. I told him I remembered it quite well. "Well," said he, "there has been a better state of affairs in our schools from that day to this in consequence of the plain talk you gave them." I remember that I was full of business at the time, and felt as if I could not stop my work; and in my want of faith I feared it would not do any good anyhow. Now, I throw this out as a suggestion. If your schools get in just such shape, remember what one individual may do single-handed in encountering evils of this kind. Let the work be followed up by half a dozen good men and women, and it will help the rising generation.

Now, friend W., which is wiser—to throw the blame on God for creating human beings, knowing that they will bring evil into the world, or to open your eyes, accept the state of affairs, and go to work with energy and faith to bring good out of evil! Again, God surely knows what a lot of mischief Satan has done. Now, will you think me reckless when I suggest that Satan also does good? The Bible tells us that God shall so manage things and events that the wrath of man shall *praise* him. Now, right here is another chance for infidels to put in and find fault. You may say, "Well, if bad people do good in a community, I think I will be bad a while. I shall rather enjoy it; and if I do good by the means, what is the harm?" We are never to do evil that good may come of it. Jesus once told his disciples, "It must needs be that offenses come; but woe to that man by whom they come." Wickedness is coming; it will continue to come; and we are going to be strong and good, courageous and brave, *because* we have to meet wickedness and sin. But this is no excuse at all for the man who does wickedly; for Christ himself has said, "Woe to that man," etc. The children of a drunken father often develop great powers of mind, perhaps somewhat by the trials that are thrown upon them in early life. The indignities they suffered made them fierce battlers against the evils of intemperance; but no credit to the drunken father who subjected them to these trials. We can not tell how far space or how far the planetary system extends; but for all that it behooves us to keep making better telescopes, and to keep searching the starry vault above.

In the same line, we can not tell exactly *why* sin is in the word; but it *is* here, in your neighborhood, in mine; in your *heart*, and *mine*. Shall we lay the blame on God, and say that he need not have placed these possibilities and evil appetites within us? Then we should be on a par with the farmer who sits down and says, "There is no use in trying;" or one who says, "God did not make things right, and I am not going to exert myself against such odds as there are against me." You see, our text sums it all up: "For the preaching of the cross is to them that perish, foolishness." It is to them that *perish*, you notice, and to them that perish because they would not try; but on the other hand, dear brother (I call you such because you sign yourself "Yours for the truth"), "unto us which are saved, it is the power of God." The whole thing lies before us. Sin is here, and Satan is here. We can follow sin and Satan, if we choose; but these very things that might discourage us—these very things that pull us down—are a mountain of *strength* to the one who is loyal to his God and loyal to himself. These very things may be a cause of *rejoicing* to him who goes forward in faith believing, to him who is loyal to his country and to his God; to him who sees a thousand things in nature on the earth beneath, and in

the starry vault above, and cause for thanksgiving and praise instead of cause for lamentation and complaint, and sloth and inaction. Now, dear brother, you may be against me in *one* sense; but if you are for the truth, as you say, we are side by side in *another* sense. You certainly would lend a hand and rejoice at the hope of helping in a work like the one mentioned by John Williams. By the way, I forgot to say that he finally *died* a martyr. He was killed by the cannibals on one of those very islands. He gave his *life* for the ignorant savages. And may God help us that we too may be ready to give our lives when the good of humanity — of poor forsaken humanity — shall demand it.

NOTES OF TRAVEL.

NOTES OF TRAVEL ON THE WHEEL.

It was just getting dusk when I reached friend Crawford's. Somebody was swinging a little girl in the front yard. It was too dark to recognize anybody; but as soon as I heard friend Crawford's voice I felt quite at home. The reason why I did not know just where he lived was because he has recently changed his residence. Like myself he decided that there are so many advantages to the grower of strawberry-plants on sandy soil he actually sold out his home, let the underdraining go, and the heavy manuring, in order that he might start a new place on sandy soil. Instead of moving my plant-beds to a sandy region, I bring in the lake-shore sand by the carload. The one who grows strawberry-plants for sale must be prepared to take up plants in the spring just as soon as frost is out of the ground. Well, if you have tried this kind of work in a stiff clay, such as we have here at Medina, you probably know something about it. Think of being stuck in the mud when it is all you can do to lift your feet—said feet being incased in a clod of mud about the size of an ordinary coal-hod. It is not altogether the disagreeable feeling of having so much on your feet, but it is ruinous to walk through the nice rows of strawberries when the soil is in just that condition. We avoid it by having our paths between the plant-beds covered with cinders, and by using a good deal of sand mixed with the soil of the bed. Friend Crawford, perhaps, made a shorter cut by starting a new home.

Mrs. C. excused herself for not getting up to welcome an old friend because she had her lap full of old letter envelopes. Shall I tell you what she was doing with them? Why, she was cutting out the stamps from the accumulation of letters of years past. Somebody had offered something like 15 cents a thousand for the canceled stamps. Just a word in regard to this stamp-traffic. It may be all right. The good women who collect them and use the money for charitable or other purposes are *certainly* right; but it keeps occurring to me that I remember of reading in the *Scientific American*, some years ago, that it seemed well nigh impossible to stop the business of fixing these stamps up to be passed off as new ones. Again and again several considerable establishments have been broken up by the police; for just as soon as the government hunted up a new kind of ink, these counterfeiters—if that is their name—would find some chemical that would perfectly obliterate the cancel, and the stamps were cleaned by certain chemicals, gummed over, and peddled out. Making collections of rare, curious, or foreign stamps, is, of course, a legitimate business; but what can honest people want of thousands and tens of thousands of ordinary postage-stamps? I hope my good friend Mrs. Crawford will not think that I mean to find any fault with her work. The same kind of work is being done right here in Medina, and even in my own home; and one of our office girls, who is a member of the King's Daughters, received $7.50 for ten thousand stamps, saved out of our own castaway envelopes.

Another little gem of a sleeping-room was placed at my disposal. As I thanked God that night for the mercies of the day, a feeling kept coming over me that I did not deserve such good friends and such dainty accommodations; but it gives me a thrill of pleasure to know that there are so many such pleasant homes in this land of ours.

I was up and out among the strawberry-plants before anybody else. In fact, I had inspected every thing in the line of strawberries and gladioluses almost before friend Crawford made his appearance. We discussed the matter of sending out plants that had been kept in the cellar or somewhere else, to be ready for shipment; and friend C. entirely agreed with me, that no plants should be sent out except those in full life and vigor, taken right from the open ground. Like the rest of us, he sometimes runs short of certain varieties; and to get along he buys of those who have a surplus; but before such plants are sent to customers he heels them in in his nice rich sandy soil. A little furrow is made, perhaps two or three inches deep. The plants are laid in this furrow, two or three inches apart, with the roots properly spread out. Then the soil is pulled over them in such a way as to make another furrow while you close up the first. Said furrows ought to be five or six inches apart. The plants are all heeled in in this way, watered and shaded if the weather is hot, until they have made new white roots. He pulled some up just to show me how he wanted the roots of his plants to look before he sent them out. I tell you, friends, it is not luck and chance that have given friend Crawford such a trade as he has in new varieties of strawberries. At this juncture I asked him the question why it was that he advertised plants nowadays only by the dozens or hundreds.

"Why, Mr. Root, I can not afford to grow plants, and put up them at the prices they are advertised in the various papers. Of late there seems to be a sort of agreement—at least among a certain class of strawberry-plant growers—at about $2.00 or $2.50 per 1000. Now, I can not sell plants, put up as I think they should be, for any such price as that."

I told him I heartily agreed with him, and that, although our prices had been for years 75 cents per 100 or $6.00 per 1000, our trade was all the time increasing; and during the past season we have had more orders for plants by the thousand than we could possibly fill. At the same time, we have been so pressed with orders that we have sent out a good many plants that were not what they ought to have been. I go over this matter rather freely here in print, because a good many readers of GLEANINGS advertise and sell strawberry-plants, and a much larger number purchase plants almost every spring and fall; but the demand is so much larger than the supply, that the price will probably be high during the coming season.

Friend Crawford has been for years an originator of new varieties of strawberries. If I am correct, he succeeds in getting improved varieties, very much as friend Livingston gets his new varieties of tomatoes. He plants a great lot of seeds. These seeds are, I believe,

selected from the best varieties of strawberries known. Each little plant is given a place, and carefully watched until it bears fruit. Then the fruit is examined critically. Nowadays, while we have so many extra nice strawberries, it is a pretty hard matter to get hold of one *really valuable.* Perhaps not one of the new plants in ten thousand is worth fussing with; and it may also be true that a really valuable berry is sometimes dropped and passed by for many years before its good qualities are recognized. Friend Crawford originated the Sterling strawberry in just this way, a good many years ago. He took samples of it to the city of Cleveland, and submitted them to men who make a business of buying new varieties. Somebody who was not quite at home in that business was very much taken up with the Sterling, and paid friend Crawford something like a thousand dollars or two for his entire stock of plants of that variety. The owner, however, did not understand introducing a new berry. He advertised it in the *American Agriculturist* and some of the other papers; but people did not seem to know him very well, and he did not have a recommendation from anybody that the berry folks did know; therefore he never got any thing, scarcely, for the Sterling strawberries. A good many people who probably thought a strawberry must be sweet to be good, pronounced this Sterling too acid, and but little attention was paid to it until friend Terry called attentiou to the fact that it was a strong grower, late enough to be usually safe from the frost, excellent color, nice shape, and of a beautiful flavor after it had been sweetened sufficiently. He also found it was very firm, hard berry, and would bear shipment well; and just now a great many people are beginning to call for a berry that is tart, like the wild strawberries that we used to gather in our childhood days; and, all together, the Sterling, after all these years of neglect, promises to be a standard berry. Very likely friend Crawford saw all its good qualities when it was his pet and the new plant of his creation—that is, so far as we ever create any thing in this line; and it must be refreshing to him to see it brought forth again, after it was so many years dropped and passed by.

Now, after I had been all over the grounds, and had had a long chat in regard to the new berries, it was not near the usual breakfast time; in fact, I rather think the people in the neighborhood were not yet up; but I felt in just the mood for a spin on my wheel before breakfast; and friend Crawford showed that he, like friend Terry, knew exactly how to make a guest feel pleasant and happy. He said that, if I really preferred to start out before breakfast, to do so by all means, although it seemed a little uncourteous to send off a visitor without any refreshment. How I did enjoy that wheel-ride from Cuyahoga Falls to Akron, in the early morning! Some of the grandest scenery in the State of Ohio is right along here where the Cuyahoga River cuts itself a path through the sandstone, sometimes 200 feet below the surface of the ground. Just as the clerks were hanging out their pretty little card, "Breakfast is now ready," at that same "City Restaurant" in Akron. I sat down and informed them that I wanted some strawberries. The waiter replied they hadn't any so early in the morning. Said I, "Look here, my friend, I just passed some beautiful strawberries right above here. Will you please get some, and charge me what you think proper for the trouble?"

Pretty soon she came back, looking a little bit undecided.

"Did you wish the *whole quart* served up for your breakfast?"

I assured her that I wanted the whole quart. I presume she had not read friend Terry's strawberry book. But, wasn't that a nice breakfast!

When I started out with my wheel, however, it began to rain. I was so determined to go on, that, for a time, I thought I would stick to the wheel anyhow. But I soon decided that prudence was the better part of valor, and, with a long-drawn sigh as I gave my wheel to the baggagemaster on the train, I came home on the cars. When it slacked up and did not rain much, I felt a good deal disappointed. Just think of comparing a wheel-ride of 20 miles to taking it on the cars, where you have to sit still on a cushioned seat, and you *yourself* are no "part and parcel" of the motive power that sends you spinning across the country.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

PULVERIZING THE SOIL.

How much has been said in regard to this matter, especially by the manufacturers of the various farming-tools for pulverizing the soil! The manufacturers of the Acme harrows have frequently told us that "tillage is manure." I do not believe, however, that the truth has been half told in this direction. However, we want to be consistent, and use reason. Since Terry and others have said so much about working the ground until it is fine and soft, there have been some — myself among the number — who have carried to an extreme, under certain conditions, this matter of continual working. During the wet springs we have had of late, I have several times, I am well satisfied, worked the ground when it was too damp to pulverize nicely, in a way that made it worse instead of better; that is, the tramping of the horses and the weight of the heavy implements compacted the soil more than it made it light. The disk and cutaway harrows have been a help in this direction. But there are times when even these tools do more harm than good. When the soil is dry *enough*, however, the more you harrow it and roll it, the better. A great many times, after we have got our ground in perfect order, a long heavy rain comes on that compacts it so it is almost as if it had not been worked at all. I have told you how my relative, Mr. Wilbur Fenn, of Tallmadge, O., managed in such an event. He waited till the ground was dry enough, and then plowed and harrowed it all over again. One year I had a piece planted to melons that had been started all right; but the rains were so heavy that the ground was literally covered with water, and, of course, the crop threatened to be a failure. I saved it by taking a nice steel garden-rake, just to my notion, and digging away the dirt around the hills until I could see the white roots of the plants. In fact, I dug so close and so deep that some of the plants wilted a little after this severe treatment. Then I made the ground fine and soft, and pulled up a "dust blanket," heaping it up in a hill about a yard wide, all around each hill of melons. I have done the same thing with tomatoes and other plants. When Terry raised almost a carload of Freeman potatoes from one barrel of seed, he said, in telling about it, that they did an enormous amount of work on the potatoes. During one of my recent visits I said to him:

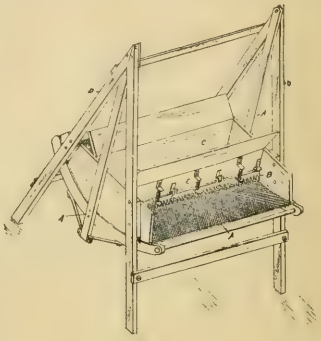
"Friend Terry, I want to know what *sort* of work it was that you gave those potatoes with the divided eyes, that produced such a tremen-

dous crop." And then I told him my experiment with melons and tomatoes, and added, "Now, was not this work you speak of something similar to what I did with my melons? With suitable tools you made the ground fine and soft clear down around the roots of those little feeble divided potato-eyes?"

"Yes, Mr. Root, that is just exactly what we did; and it cost so much because it was hand work. With the new Iron Age and Planet cultivators, we aim to do the same thing as nearly as possible by horse power."

Well, during the present season, with the two cultivators mentioned, the dirt has been kept finer and softer on our grounds than ever before. In fact, Mrs. Root objects to going through the lots to see the crops, because the ground is so soft that her feet sink at every step, and it is very hard work walking over the cultivated ground. Our "Palmer" raspberries were given the same treatment as the potatoes, and there we have had the finest yield of blackcap raspberries I ever saw in my life. The recent drouth seemed to have but little or no effect on the fruit at all. In rows where this constant cultivation had been omitted, the soil became as hard as a brick, and opened in great fissures. Right through my field of rye adjoining, there are now cracks big enough to drop in a hen's egg. We had a magnificent crop of rye, notwithstanding; but I mention it to show you what a contrast there is between that and land adjoining the potatoes, that had no cultivation at all. The potatoes stood the drouth grandly, and just now we have had two pretty good showers right on that soft ground. It was just fun to see how that mellow earth took up the water just as a sponge does. Not a drop of it ran away; but on the rye-field the water filled those big cracks, and then ran off into the road.

So much for fining up the soil for farm crops. Now, we want to do the same thing for plants in our plant-beds. For many years I have been running the ground on our plant-beds through the sieve that has been pictured in these pages, and is now to be seen in the tomato-book. A good many times I have speculated on a machine that could be operated by simply turning a crank, or, better still, pulled by a team of horses. The machine should be something like the Hoover potato-digger, but it should be so arranged as to put all the stones, rubbish, and lumps of dirt in the bottom, and the fine soil on top. You may take almost any ground—the poorest in the world—and if you will sift it so as to have the fine soft particles on top, and all the rubbish and coarse lumps underneath, you can get a crop providing you have water. If I could have my way I would have the surface just like sifted road dust; have it so that, when you pass your fingers through it, it will seem almost like wheat flour or middlings; and I have wondered why greenhouse-men did not have some such arrangement to work up their fine manure, and mingle it most thoroughly all through the soil. For instance, sift your dirt first as I have recommended, and then get some old fine manure and sift that. Now pass the manure and dirt together through the sieve, taking first a shovelful of one and then a shovelful of the other: thus you will get a combination that will do wonders. If you have some old decayed sods, so well decomposed that they can be put through the sifting-machine also, then you have about the best material for raising plants and starting seeds that can well be compounded. Now, I had begun to think that I was the pioneer in this matter of having a suitable machine for sifting dirt; but our friend E. E. Wolf, of Springfield, O., it seems, has been working right along in this line. He has invented a machine, and put it on the market, a cut of which we give below. Permit me to say, before I describe it, that we found we could not get manure or rotted turf to go through our sifting-machine without rubbing it through with the back of a rake or something of that sort. The machine shown below anticipates this need.



WOLF'S MACHINE FOR SIFTING COMPOST FOR GARDENERS AND FLORISTS.

The machine stands very solid and secure on four feet of stout hard wood. The sieve is made, as you will see, so as to rock or swing; and then there is a series of blunt rake-teeth—see letter B in the picture—and these rake-teeth rub back and forth on the sieve A. A series of coiled springs, E, make these blunt teeth rub just hard enough on the heavy galvanized-wire screen. The operator takes hold around the wooden bar at A, and pushes the sieve back and forth, the teeth B being fastened on the stationary part E C. While one man works the screen back and forth, one or even two other men are needed to shovel the compost into the hopper C. The action of the teeth is such that sods, coarse manure, and every thing of that nature, are pulverized and worked through the screen. Where the compost is in proper condition, the inventor says it keeps two men busy to shovel it into the hopper C. To prevent the accumulation from getting in the way under the machine, the apparatus should be set upon a platform, or, better still, over a hole in the floor, so as to let the pulverized potting soil, or whatever you may choose to call it, fall into the cellar beneath. We have had a machine here on trial, and it does excellent work; but it seemed to be rather better adapted to the needs of florists than to the average market-gardener. For our use, on our quarter-acre of plant-beds, something like the machine shown in the tomato book seems to be handiest. The price of the above machine is, I believe, about $25.00.

THAT PIECE OF RYE—SEE PAGE 612.

Yesterday, July 24, we thrashed, and I was considerably disappointed (!) in getting 140 bushels of exceedingly nice rye when I had planned to get but about 100. As there were only three acres, and it was here and there in little patches, most of it, you may be sure I felt as if I had done pretty well for a one-horse farmer. You see, that is almost 50 bushels per acre; and if I had done the raking-up myself I feel quite sure that I could have made it quite fifty to the acre. We were obliged to borrow a horse-rake to follow after the harvesters; and before I knew it my man had finished and taken the rake home. Every time I go over the field it makes me feel bad to see the great plump heads of grain scattered right and left, and almost all through the rye stubble. We put in rye the last thing after taking off our

crops; and I fully believe, with Terry, that it is much better for the ground to have some growing plant on it every month in the year. Just think of seeing rye and clover looking bright and green every time we have a warm rain in fall, winter, and spring! If I could get any thing like the old price for my rye I do not know but it would pay almost as well as some of my garden crops.

Hold on! there is something more in regard to this rye business. A part of it was on a piece of ground where I plowed under red raspberries after ripening their crop, say just about one year ago. After the raspberries were turned under we put on buckwheat and got at the rate of 40 bushels per acre, as I have told you. Now, inside of a year two crops of grain have been grown on this ground—one crop of 40 bushels per acre, and a crop of rye of about 47 bushels per acre. Did I use any phosphate? Not a particle; but I did put on some bonedust with the buckwheat, and some more with the rye—about 200 lbs. to the acre; but, more than that, I put on at the rate of perhaps 25 loads of manure to the acre, that came from a neighbor's barn near by. It had been piled up against the barn so that it was rotting out the sills and the weather-boarding of the barn, and he finally let me have it for a dollar a load. Mrs. Root feared that I was putting more dollars on that poor piece of ground than the crop would bring. The buckwheat has been sold for about $1.00 a bushel, and the rye will bring perhaps 75 cts. a bushel. It is very fine and plump, and we shall sell the greater part of it for seed.

SOMETHING VALUABLE FROM OUR OHIO EXPERIMENT STATION.

Friend Root:—The question asked by J. W. Nicodemus, about how much hot-bed a ten-horse-power engine would heat, I may be able to help a little. Last winter we used such an engine for underground heating in our greenhouse, which was very much like a hot-bed. The amount of space we heated was 13 feet wide and about 85 feet long. This would amount to over 10 rods of six-foot hot-bed. In heating the amount of bed that we did, I do not think we used over one-fourth of the steam that was made by the boiler, the rest being used for heating other parts of the houses. So your estimate of a ten-horse boiler heating a quarter of an acre is not far out of the way. The difficulty we found was, that the steam went into the ground at too high a pressure, and would burn the plants; so, in getting all there is in such a boiler there is some danger where the steam is first let into the pipe. A larger boiler at a lower pressure would be better. The lettuce-plants that we grew over this underground heat did far better than they would without it, and so did the lettuce rot, which at one time threatened to spoil the crop. But I think that, for hot-beds during the spring months, it will be a good thing.

MUSHROOM SPAWN THAT DON'T GROW—WHO IS TO BLAME?

In the matter of poor mushroom spawn, Johnson & Stokes are not alone. We bought our spawn of A. W. Livingston & Sons, of Columbus, and it was poor. The reason I know this is because spawn obtained from Henderson, planted at the same time and under the same conditions, produced a fairly good crop. I do not think it best to blame the seedsman too much for such things; but where it can be proven that they have sent out poor stock they should be willing to do something to make it right, for their loss would not be so great as the planter's. I would give as much to be able to tell good spawn, or for some way to test it in a reasonable amount of time, as I would the vitality of seeds. Can any of the readers of GLEANINGS tell us how? E. C. GREEN.

Wooster, Ohio, July 14.

HEATING HOT-BEDS BY STEAM; A HOME-MADE ARRANGEMENT.

I notice on page 536, July 1, inquiry is made about a boiler to heat hot-beds. I have been having some thoughts on that line myself, and have been thinking why a large sap-evaporator could not be covered tight with matched boards, like your kettle for making steam for melting wax, and produce a large amount of steam in a cheap way. I suppose the evaporator could be fixed in some way to indicate the stage of water in it, so as not to run dry. I should also like to ask you how deep you would lay tile in an asparagus-bed to put steam through. G. W. LAWSON.

Centerville, O., July 10.

[Yes, friend L., you could cover any sort of large kettle, or even a maple-sap evaporator, with wood so as to generate steam with sufficient pressure to warm hot-beds; and if the man who makes and owns the machine were to run it himself, and not let anybody else touch it, I think he might get excellent results from it; but let the hired man take hold of it, and if the steam be confined at all, he would be likely to have a blow-up, or, at least, have the top blown off. If he failed in that he would boil all the water out; and, therefore, all things considered, I think a second-hand steam-boiler would be cheaper in the end; besides, it would be much greater economy in point of fuel, *besides* being much more convenient. Where one has a large kettle, however, and has not the money to buy a boiler, I think he might heat his beds very well. A very little steam gives all the heat required, and almost no pressure at all is just as good as or better than an ordinary boiler pressure. As asparagus goes down pretty deep I think I would have the tile 2 or 2½ feet below the surface of the bed. Asparagus, rhubarb, and all such rank growers, respond very quickly and readily to any gentle steam heat.]

A STRAWBERRY REPORT, ETC.

I am now out of the bee-business entirely, and have continued GLEANINGS only for the strawberry talk. Please give us all you can of it. I am now a full-fledged strawberry-crank, for which Mr. Terry and A. I. Root are mainly responsible. I must tell you about my Gandys. One acre, 175 bushels, ⅜ assorted fancy, brought me $4.00 per bushel straight; ⅛, seconds, brought 10 cts. per quart. I picked 54 bushels one day, which sold for $200.00 Ordinary berries have no show when the Gandys come. They were sold in the city of Jackson, 18 miles distant. All went by wagon. They had never seen such berries, nor I either. The Haverlands are the heaviest bearer, and are a good selling berry; also the Warfield, which were as large again as the Wilson, and the best canner on the list. The Bubach is extra large and fine this season. The Parker Earle did well. The Michals were fine, and yielded quite well. I have quite a number of new varieties, including the Timbrell, of which I bought 50. I left one plant to fruit, and they have certainly a fine flavor, and exceedingly firm. Where can I get a good barometer, such as you sold a year or two ago?

Leslie, Mich., July 17. C. N. FLANSBURG.

[Well, friend F., if your success was in consequence of reading the strawberry book, I

think it was truly a good investment. As there was not very much demand for the barometers, we took them out of our price list; but we can still furnish them at $2.50; 10 cts. extra if sent by mail. And, by the way, I can not understand how it is that so few barometers are used by farmers and market-gardeners. Our own saves us several times the cost of it, over and over, in a single day. I told you a year ago about getting my rye harvested without having a drop of rain touch it; and, again, how we put all hands to drawing it in and stacking it so as just to escape a heavy rain. Well, we did the same thing again this year. When the rye was just right to draw in, the barometer began falling rapidly. By putting all hands at work it was nicely stacked, topped out, and perfectly protected just as the big drops began to fall. A good many would say this is luck. It was not luck at all; it was watching the barometer, and laying our plans accordingly. A few days ago a neighbor ordered a lot of cabbage-plants taken up, just as it began raining. The clouds and the wind certainly looked as if there was going to be a big rain; but the barometer was running up rapidly. I told my neighbor we should be very glad to sell him the plants, but that he certainly would have to carry water to save them if they were set out at such a time. He finally stopped having the boys take them up, and it turned out just as I told him it probably would. When Ernest and I were out riding our wheels we made inquiries in several small towns for a barometer; but nobody knew of such a thing anywhere around. Now, I do not say this because I want to sell these instruments. If you propose to buy a barometer, and then pay little or no attention to it, you had better not have one. You must get *acquainted* with it if you wish to have it be a real help. I am glad to hear your good report of the Timbrell strawberry.

ANOTHER STRAWBERRY REPORT.

My bees are just booming this summer, and are piling in the honey almost faster than we have time to take it out, and must therefore still have more goods in order to keep things going. I am a market-gardener and a bee-keeper, and sell my fruit and vegetables to the consumer, peddling them out from house to house to regular customers over town, and thus dispose of my honey the same way at the same time. Prices for fruit (berries), vegetables, and honey have been very satisfactory this summer thus far, being a good demand for almost every thing. I tell you the Bubach No. 5 and the Haverland are regular dandies in the strawberry line, and the Lloyd's Favorite among the raspberries. Well, I dare not let myself in any further just now, for I am in too big a hurry.

Martin D. Wenger.

Elkhart, Ind., July 18.

EXPERIENCE WITH BUCKWHEAT.

The following is clipped from the *Practical Farmer*. It may be a little late in many localities; but we have had excellent success here with buckwheat sown even after the first of August. The particular point in the following is, that buckwheat may be used to bring up land, and still give profitable crops. Another thing, it shows how two full crops, even of farm products, may be obtained in a season.

I have best success with buckwheat in regular rotation, buckwheat, oats, and clover, three-year rotation, mowing only one year. If left longer, the clover kills out, and the growth is not so large to plow under. Eight years ago I had a ten-acre field that would hardly raise white beans. I thought that a three-year rotation, as stated above, would bring it up to a good state of fertility, and started in with the experiment. Sowed to oats, and seeded to clover in 1885. The season being favorable, a good catch of clover was obtained, and about 15 bushels of oats per acre. The latter part of June following I plowed the clover under, about 1½ tons per acre, and sowed to buckwheat, harvesting about 18 bushels per acre. The following season I harvested 30 bushels of oats per acre, with a fine catch of clover. Season of 1888 I harvested about 2½ tons of clover per acre. Season of 1889, I harvested 30 bushels of buckwheat per acre. Season of 1890 I harvested 40 bushels of oats per acre, though a very unfavorable season for oats, many fields being plowed up for buckwheat, the grass-catch this season being a perfect mat. Last season I harvested 50 bushels buckwheat per acre, and the land is now sufficiently fertile to raise any kind of crop. This rotation gives two full crops in one season, and, by giving the soil the benefit of the first, you improve the soil much more than the second one exhausts it, and still have the most profitable crop of the three rotations left. I consider it the most profitable grain crop I raise; always ready sale immediately after harvest, for cash, at a fair price. For good, rich, dry soil, I think the Japanese variety does best, but needs to be sown much thicker, as it does not branch so much. The later it can be sown and ripened before frost, the larger the crop. Next to the Japanese I would sow the American Gray. I never had any luck with the silverhull.

Granville Summit, Pa. M. M. Luther.

A GOOD WORD FOR COMMERCIAL FERTILIZERS, ETC.

Bees are doing very well, bringing in the finest honey I have ever had. I will say, also, that I tried commercial fertilizers this year—the first we ever used. On squashes there is a marked difference in favor of the fertilizers. I have 4500 celery set the new way, and think the fertilizer is a great help on them. I should be glad at any time to have you visit us. We are near the station, our land running up to it.

Fairlawn, O., July 18. Chas. W. Frank.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
Illustrated SEMI-MONTHLY
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For he doth not afflict willingly, nor grieve the children of men.—Lam. 3:33.

The Hon. Eugene Secor, of Forest City, Ia., we notice by the *American Bee Journal*, has been appointed judge of the apiarian exhibits at the World's Fair. Mr. S. is a "fair" man, and we feel sure that all the exhibitors will be pleased with his appointment.

Bro. Alley has found one "stray testimonial" favoring the Punics, and desires us to take notice. Having read a very large number that were decidedly unfavorable, we too have been of late watching for a "stray testimonial" that was favorable, but without success. Friend Alley is to be congratulated.

The *Colorado Magazine* is the name of a new illustrated periodical that compares, in the character of its articles and its illustrations, very favorably with the *Century*. Why we speak of it is because a prominent writer for the *American Bee Journal*, Will M. Barnum, is its assistant editor.

The Langdon non-swarming arrangement, according to the *Bee-keepers' Review*, and a few scattering reports that we have had in our own mails, so far is not proving to be the success that was expected of it earlier in the sea-

son. Indeed, the bees in some cases seem to be *more* inclined to swarm with the attachments than before. The double dose of bees suddenly poured into one colony sets them wild, and they swarm anyhow. But perhaps—at least we hope so—later reports will justify our earlier expectations.

THE *Amateur Bee-keeper*, by J. W. Rouse, is the name of a sprightly little work intended especially for beginners. It has been issued from the press for some time, but it has been only recently that a copy came into our possession. It seems to be correct in method, and reliable and orthodox in its teachings. It covers the whole range of practical apiculture, and yet is sufficiently full so as not to be misleading. It is published by the Leahy Manufacturing Co., Higginnsville, Mo. It can be obtained of the publishers, or of us. Price by mail, 25 cts.

REFERRING to the Weed artificial comb, Mr. E. E. Hasty says, in the *Bee-keepers' Review:*

GLEANINGS pleads not guilty about the Weed comb. It looks like a bad case of blundering on my part. I must investigate dates a little (when bees are not swarming); and if the description was promptly given, before people had largely learned the thing from other sources, I will eat "humble pie" as if I liked it. Humble pie is good for hasty folks any way, but it doesn't taste good.

We are all liable to err, and we will not lay up any score against our friend, especially when he acknowledges his error so gracefully. Would that more "hasty folks" were of that kind!

IN our last issue we reported that the *Canadian Bee Journal* office was destroyed by fire. We have since learned, with regret, that the entire plant of the Beeton Publishing Co., of which the *Canadian Bee Journal* and *Canadian Poultry Journal* were a part, was burned. The loss is estimated at $5000.

Later.—Since writing the above we are pleased to announce that the Goold, Shapley & Muir Co., Limited, have purchased the *Canadian Bee Journal*, and that R. F. Holtermann is to be editor and manager. We are informed that the journal will be "issued monthly, enlarged, and the appearance as well as the material will be considerably improved." We extend our hearty good will to the new owners.

ALTHOUGH it is now the 26th of July, honey seems to be still coming, although the flow is perceptibly easing up, as is evidenced by the few robbers now poking around the exposed tops of hives while being manipulated. The reports for the North are still good, and so far we have received only three adverse ones—two from Illinois and one from Missouri. There is no doubt now but that 1893 will go on record as the "great clover year," or, as we sincerely hope, the beginning of a series of good years. Basswood has yielded fairly in some localities; but with most bee-keepers it is the "off year." The reports from the South do not show any thing out of the ordinary; in fact, on account of dry weather the season has been rather poor.

IT would seem from Rambler's article, elsewhere, that the big stories about large crops of honey have a tendency to reduce the prices of honey in California. This is no doubt true everywhere. Perhaps the encouraging reports that we have been inserting elsewhere, together with our editorial notices of late, showing that 1893 is a phenomenal honey year, will have a depressing effect on prices. We hope not, because this year there will be very little encouragement to glucose-mixers; and because of this when extracted honey seems to be scarce, the price does not go up according to usual law of supply and demand; and when honey *is* plentiful, the price remains largely the same. We may expect a slight reduction in prices, but the large yield will more than offset that. It is the very small yields of from five to ten pounds per colony that dishearten almost any bee-keeper, no matter what the price is. The very fine quality of honey this year will tend greatly to keep prices up.

BULLETIN No. 96 from the Michigan Agricultural Station, entitled "Honey Analysis," by Prof. Cook, has been received. It treats of the recent developments on the subject as gleaned by Prof. Cook, and which were introduced by him some months ago in our columns. The conclusions arrived at are essentially the same as there stated; viz., that chemists can easily detect adulterations of honey with glucose or cane sugar; that honey-dew honey can probably be distinguished from glucosed honey; that chemists can not distinguish between sugar-syrup honey and honey from flowers. Regarding this last proposition, we have to say we received a letter recently from Prof. Wiley, to the effect that chemists do make the distinction. Whether the knowledge of the method by which it is done was obtained after the preparation of this bulletin, we can not say. The bulletin is sent out for free distribution to residents of Michigan by applying to the Secretary of the Agricultural College.

THE QUALITIES THAT SHOULD GO TO MAKE UP A GOOD EXPERIMENTER.

THE Michigan Experiment Apiary is booming, and there is promise that the bee-keepers not only of Michigan, but of other States as well, will gather much of value from the experiments reported in the *Bee-keepers' Review*. Brother Hutchinson has a good article on experimental apiculture in his last issue. There is one paragraph that we wish especially to indorse, and it reads as follows:

It is not every bee-keeper who is "cut out" for an experimenter. It needs a person of a judicial cast of mind—one who is perfectly willing, so to speak, that an experiment shall prove the truth. Too many of us are inclined to make a decision *first*, and then go to work and try to prove what we already believe. This will not answer. An experimenter ought to be wholly disinterested in the results—that is, be willing that an experiment should prove either side of the question.

Too many experimenters, much to the disgust of the careful and conscientious observer, and to the very great hindrance of real progress, figure out in advance just how a certain thing *ought* to work. Yes, they will twist their experiments and then look at the results cross-eyed. Now, we should expect and desire to see in the candid experimenter one whose previous conclusions would be sometimes modified. Such a one who has never had occasion to change his mind after a series of experiments, we should consider not altogether a reliable guide; for no one has ever yet been able to form correct conclusions before he has tried. Yes, indeed, too many experiments turn out just as the experimenters want them to. From what we know of our friend Mr. Taylor, of the Michigan Experiment Station, we should not expect any thing of this kind in him.

DO SWARMS UNITE WITHOUT A QUEEN?

THE editor of the *Review* made a visit to the Michigan Experiment Apiary. He finds that the apiarist, Mr. Taylor, will devote more or less of the whole 300 colonies to experimental work. After speaking of the pleasant location

of the apiary, and the slope of the grounds, etc., Mr. Hutchinson says:

From eight o'clock in the morning until half-past one in the afternoon (when I left for home) there was scarcely a moment when there was not a swarm in the air, and sometimes two or three. There were queen-traps on almost all the hives. As two or more swarms would unite and then go piling into one hive, perhaps one from which a swarm had not issued, Mr. Taylor would remark with a smile, "I wonder what Mr. So and So" (mentioning some man who had said that bees always go back to their own hives when the queen is not with them) "would say if he were here now."

We suspect that "Mr. So and So" means *us;* at any rate, we will assume that it does. We did not say that bees would "*always* go back to their own hive" when the queen was not with them; but we did say, on page 275, that swarms in the air, without queens, were "not nearly so apt to unite." We have just been down to ask our neighbor, Mr. Burt, his experience in this line. He clips all his queens; and although he has a good many swarms he tells us that it is very seldom that he finds that two swarms in the air will unite. In the great majority of cases, each swarm will go back to its own hive. But then, friend Taylor, you know bees have a way of doing things differently for different bee-keepers.

Later.—Since writing the above we ran across one of Dr. Miller's straws (this issue) wherein he says his bees "are worse than usual about uniting and going back to the wrong hive when they swarm without a queen." We suppose friend Taylor will smile broader than ever when he reads that straw. Nevertheless, Mr. So and So doesn't give up yet but that swarms without a queen are *more apt* to go back to the old location.

ANOTHER WHEELING-TOUR AMONG BEE-KEEPERS; A VISIT AT H. R. BOARDMAN'S.

A few days ago a small party of wheelmen invited your humble servant to accompany them to Norwalk, a town some 43 miles west of Medina. In the company was a cousin of ours, Miss Gray, the only lady. Some fears were entertained as to whether she would be able to stand the trip; but we agreed to let her set the pace, and accordingly she rode ahead, taking such a pace as would be to her perfectly easy. When we reached Litchfield, 10 miles away, we found we had taken just one hour. Wellington, 10 miles further on, we reached in the same time; and still our lady pace-maker, instead of being fatigued, was jubilant with spirits, and eager to go on. However, we stopped at the hotel for a half or three-quarters of an hour. After resuming the journey the next point we reached was Norwalk, 23 miles further on, over roads less easy of travel. With Miss Gray as pace-maker we made the time in two hours and a half, making the whole journey of 43 miles in four hours and a half. Our pace-maker was somewhat tired; but after dinner she seemed to be as fresh as ever, and ready to finish her journey to Sandusky, making a total of 70 miles. At Norwalk we left the party to make our way back home, intending on the way to visit, perhaps a little out of our road, Mr. H. R. Boardman, a bee-keeper who needs no introduction to the readers of Gleanings. Reaching his apiary at East Townsend we found that the bees were still working strongly on clover and basswood, and the merry hum of thousands of workers was delightful indeed, for so late as July 21. We looked about the apiary and saw no one. Finally we discovered one of the helpers crating up honey in the honey-house. We feared that Mr. Boardman might be away—possibly at an out-apiary; but as fortune has usually favored us on these bicycle-tours, we were told by the young man that he was in the house. A knock at the door brought the response, "Come in!" A moment more found us in the presence of our East Townsend bee-keeper apparently sending out bills for honey shipped. We had given him no intimation of our visit; and after he had recovered from his surprise we began to talk bees at once. We arrived there about 3 o'clock, and told our friend that we could not remain long, as we wished to get home that night, and there were some 40 miles ahead of us. As usual, we found our friend full of bee-talk. About the first question we asked was, as to

WHAT HAD BEEN THE HONEY-FLOW.

"In some respects it has been remarkable," said our friend. "My honey is not all off yet; but one of my men estimates that my crop of comb honey will be somewhere about 10,000 lbs., from one apiary of less than 175, spring count."

"But you have more than one yard, haven't you?"

"Only the one. I had some forty colonies last fall in an out-apiary, that I did not feel disposed to put any more expense upon, and just left them out of doors, to take their chances, with the result that they nearly all died; and what lived were too weak to be of any use. But," said he, "I lost none at the respository here at home, wintered on my plan."

"Then," said we, "your loss was not due to any fault of your method, but to lack of attention."

"That is just it."

As our time was limited we changed the conversation pretty often. We next asked our host if he could explain why clover had begun to yield in the good old-fashioned way this year, and had failed to do so for the past four or five years.

"I don't know any thing about it," he answered.

We then suggested the theory that all sorts of crops have their cycles of four or five years of yielding well, and also their cycles of yielding little or nothing.

"That is one of things that I 'don't know,' in the language of Dr. Miller," said our friend. "But I know," he continued, "that all kinds of clovers have been yielding remarkably this season. Sweet clover seems to be doing more than usual."

"Yes," we remarked, "as we came along it seemed to skirt the roadsides almost our entire journey, and we observed that it was thickly covered with bees. But how do you account for the fact that these sweet clovers seem to select the roadsides for so many miles? Down in Medina they say, in spite of our protests, that A. I. Root goes out nights scattering sweet-clover seed along the roadsides."

"Yes," said Mr. Boardman, "they are accusing me of a similar thing. The fact is, the seeds drop down by the roadside, and during muddy weather they are picked up by wagon-wheels and extended over miles of road."

"There, there! you have given us a new idea," we exclaimed. "We have tried before to convince our Medina farmers that we did not scatter the seeds; but here we have the real explanation."

"Yes," said Mr. Boardman, "within the last few years sweet clovers have taken a wonderful growth throughout the country. We never used to see them."

Again we changed the subject, for we desired to pump our friend as much as we could before we left.

"Do you still cut out combs from the brood-nest of your side-opening hive?"

"I do," he replied, "but I am using more

built-out combs than formerly. I find that the bees are more apt to build drone comb during the swarming season; but after that time they are quite inclined to build nothing but worker comb; hence, early in the honey-flow I give drawn-out combs; and, later on, frames with only starters of combs."

It will be remembered that Mr. Boardman has a side-opening hive, and his practice in the past has been to cut out combs in the brood-nest from those that did not have brood in, compelling the bees to carry their surplus up into boxes for the want of storage room below. These combs that contain honey are extracted, and are rendered in the large Boardman solar wax-extractor.

Once more we changed the subject.

"What about the Langdon non-swarmer? have you tried it?"

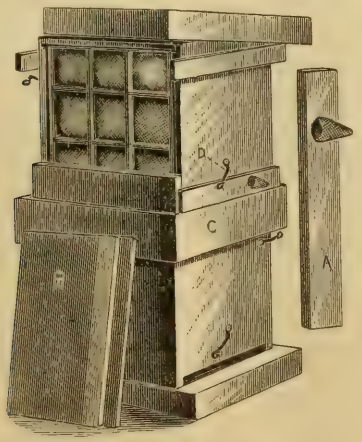
"I have not; and I do not know that, for my purpose, I want to. I desire bees to swarm. Just come with me."

We took our hats and started for the apiary.

"There is a colony," said he, pointing to one, "that was bringing in, by the scales, from four to five pounds of honey daily. The new swarm, after being hived, brought in over double that amount daily. Besides that, the old colony was doing something, and that is about the case with more of them. Yes," he added, by way of emphasis, "I *want* my bees to swarm."

We do not remember exactly, but we think he said that, for him, the parent colony and the swarm would gather considerably more honey than any colony would gather with the same force of bees, with the swarming impulse taken away, *if* such could be done.

As we passed along, Mr. Boardman, pointing to a number of hives in which there were cone bee-escapes at the entrances of the upper story, said, "There is the best bee-escape out. I just simply attach one of these escapes, fastened to a thin strip of board 2 inches wide, and the width of the entrance. There," said he, "by turning this wire button over it, you see it can be attached and detached in an instant. When a super is full I put this on at night, and the next morning the bees will be all out, with the possible exception of two or three."



BOARDMAN'S HIVE.

The bees, instead of going through the bee-escape into the brood-nest direct, come out into the open air and go down to the entrance below, with which they are familar. As our readers may have forgotten what the Boardman hive looks like, we reproduce a cut which was shown some time ago in GLEANINGS. The bee-escape is shown in position. It was friend Boardman, we believe, who gave the first published account of the successful working of the cone bee-escape. But the matter seems to have been dropped at the time, and no particular prominence was given to it until about a year later, when our enterprising friend J. S. Reese introduced it to the bee-keeping world.

As we walked through the apiary, Mr. Boardman called our attention to his bee-feeder. We pronounced it the best entrance feeder we had ever seen, and requested him, when he had time, to write up a description of it for GLEANINGS.

"Did you notice," said Mr. Boardman, "that the grass is all kept down in the bee-yard."

"Yes, we did notice it."

"The weeds were shaved down," he continued, "only once this spring, and you see how clean the ground is now."

We continued walking through the yard until we came before three of the mammoth Boardman solar wax-extractors. These are kept constantly going, and Mr. Boardman is constantly accumulating some nice beautiful wax of first quality; for you know he cuts combs out of the brood-nest to force the bees into the supers; and these combs must be disposed of. You will remember, some time ago we raised the question as to whether or not the solar wax-extractor rendered all the wax out of the cocoons. We challenged our friend to send us 25 lbs. of slumgum, or refuse, saying that we thought we could show that there was still wax in it. We did show the presence of wax, and that was all. We secured, after a great deal of labor, by the use of sulphuric acid, wax-press, etc., a few ounces. The test proved that Mr. Boardman secures practically all the wax there is in the old combs, and that the only reason why this slumgum makes such a fire is, that the propolis, melting at a higher temperature than is reached by solar wax-extractors, remains in the slumgum. We were pleased to notice that Mr. Boardman uses the extractors, not only for rendering out combs, but for drying out fruit, corn, etc. By the use of ventilators near the top he lets the moisture escape as the fruit dries.

As we looked at the bottom of the extractors, we asked him what it was that prevented the boards from shrinking and letting the wax run through the cracks.

"I had some little trouble in that direction, and an old carpenter told me that butternut was the least liable of any wood to shrink or swell. After using that kind of wood I had but little trouble."

We will explain to our readers, that the Boardman solar wax-extractors have, for the bottom, only matched boards, and, of course, it is desirable that the stuff be put together as tight as possible.

We intimated several times that we should have to get on our wheel, because we had to be at home that night. It was very hard to break off in the midst of so many interesting topics. We finally told our friend that we hoped we could call upon him again this same season, and take a little more time. We mounted the wheel at 4:20, having stopped an hour and 20 minutes. At 10 minutes of 6 we were in Wellington, some 20 miles distant. We did not stop to talk long, but sped over to a restaurant for a lunch, and at 6:6 we were on our way again. At exactly 7:45, standard time, we were in front of our own door, the last 20 miles being made in 1 hour and 39 minutes. Our entire run that day was 90 miles; and so perfect are the wheels nowadays that we felt little or no fatigue. Indeed, we felt as if we should like to go another 20 miles.

Perhaps some of you will not believe this—

that is, those of you who have never ridden wheels. But such feats are of rather common occurrence now, and we mention them only to show that the bicycle is a rapid and practical means of conveyance to points within 100 miles. Indeed, we could not have taken a train and visited the various points we did, because the trains seldom or never go so as to start and stop whenever we want them to; and while the ordinary passenger trains make much faster time when traveling, we often have to wait several hours before we can take them, and, of course, valuable time is lost; but the ever ready wheel stands at our bidding.

JOHN CHINAMAN, AND THE "PICTER" ON PAGE 571.

If it hadn't been for the aforesaid picture, I think I might have forgotten to say any thing about how John carries tremendous loads by means of his pole. Near Los Angeles I went out to visit the Chinese gardens. The rows of cabbages were so long that Mrs. Root got tired, so I wandered off by myself. The Chinamen were not very communicative in this garden, but I managed to get a few answers to my questions. One of them was gathering cauliflower. He had two baskets, each one of which would make a pretty fair half of a one-horse wagonload. He filled these brimming full, and then adjusted his pole; and after he had got his load vibrating just right he skipped along, making the vibrations keep time to his steps, and moved his immense burden with astonishing ease and celerity. I don't suppose a Yankee could ever learn to carry a burden in that way, and I am afraid he would never learn to carry as much, and as safely and quickly, as a Chinaman, even if he could. In Portland, Oregon, a Chinaman had a job of carrying firewood upstairs. He did it with a couple of baskets and a pole; and the way he trotted upstairs, without bumping a basket, with more wood than an Irishman could have carried on a wheelbarrow, was a wonder. Somebody told me that they could not carry these large loads if it were not for those peculiar vibrations. It probably works something like the sprocket-wheel on the modern Columbia bicycle. No matter; if you haven't seen a Chinaman carry a small wagonload on a pole, just watch him the next time you have an opportunity. Now, Rambler may succeed in swinging his pole of honey Chinaman fashion; and he may possibly get some wooden shoes and a starched skirt coming down a little below his regular coat; but I don't believe he will ever be able to carry any such load as they do. I have several times wondered why it was that the rest of the world did not learn how to carry heavy burdens as the Chinese do.

TRADE NOTES.

A SURE WAY OF PREVENTING SPARKS FROM HOT-BLAST SMOKERS.

A few days ago we were favored with a visit from Dan White, that bright and enterprising bee-keeper of New London, O. Like all the rest, he has experienced a phenomenal honey-flow; but like the rest, too, he had let a portion of his bees die during the past winter, because, the last four or five years, it had not paid him to keep them. He now says that, if he had given those that died about $50.00 worth of sugar, he would have received in return over $300 worth of honey.

He was greatly pleased with the principle of the Cowan extractor and the new Crane smoker. He has always used the Bingham, and likes it. While we were discussing smokers he mentioned, incidentally, that he had got rid of the spark nuisance by inserting in the nozzle a piece of common window-screen wire cloth, about 3½ inches square. "But," said we, "doesn't this fill up and cause trouble?" "Once in a great while," said he; "but it is so little trouble to get hold of one corner and pull it out, and give a few raps on the bench, and replace it, that I would never think of going without the wire cloth again, because it prevents the throwing of the sparks from the smoker-nozzle absolutely."

We considered the idea so valuable, cheap, and effective, that we have decided to insert it hereafter in all the Crane nozzles; and we feel quite sure that Bro. Bingham will favor his trade in a similar way. All bee-keepers now owning Crane or Bingham smokers, or, in fact, any smokers with detachable nozzles of the hot-blast type, will find it a decided advantage to put the wire in now; and then when their smoker gets nearly empty they will have no trouble from sparks.

THE LANGDON NON-SWARMER; A REPORT OF HOW IT IS WORKING THIS YEAR WITH THE INVENTOR.

On page 576 we asked for reports as to how the Langdon non-swarming device was working this summer; and among others a report from the inventor himself. He has kindly responded as follows:

Mr. Root:—In regard to the non swarmers, I am obliged to say that, for some reason, they have not done quite so well as they did last season with me. Also, I have had a few reports of failures by those using them. One neighbor makes his go all right, and is getting a lot of honey from the two hives. Another had three swarms from ten devices in use. Eugene Secor writes that his did not work right; also Mr. Gemmill, in Ontario. A few others are all I have heard from.

How much the difference in mine depends on the season is hard to tell. There has been some swarming—a small per cent—from the 60 non-swarmers in operation on my house, and I find, from my experience this year, and from the few reports I have received from those using them, that there are three points that it will not affect; viz., occasionally a queen is killed, and hatching cells make trouble afterward. If the queen is old, and the bees try to supersede her, they will build cells in the closed hive; and then if it is opened soon after, she might lead out a swarm. This can be stopped by keeping all queens in their prime as every bee-keeper should do.

Again, it is known that they will sometimes swarm in the ordinary way with only eggs in the queen-cells that they leave. Running so many bees into the same hive seems to encourage this extreme of the swarming fever, and it has been done more frequently with the non-swarmer in place than before. To what extent shading the hive would help this, is yet to be seen. Also, there might be a great difference of bees as to that point. I have only Carniolans, and so do not know what Italians would do under the same circumstances.

These are exceptions; but they may stand in the way of having the plan largely adopted. I can make it of important use to myself in combination with my house-apiary, *even as it is now*, because, with the loss I have had, I am ahead in the saving of work. They were put in operation and on the market late, and I think that will account for the failure of some. But I made one mistake in my circular, in instructing them to make the change of bees and cases from one hive to the other once in seven days instead of not over five.

A natural queen-cell hatches in nine days; so if the bees have the swarming fever very badly, and start a cell from a larva just hatched from the egg, or one day older, they can seal it and swarm on the fifth or sixth day from the time they are turned into the other hive *if they start it the same day.*

I think this is where the most of the failures lie; and that, by a careful working-up of these points, under the different conditions found in the various

parts of the country, the plan will finally be brought out so that it will work with but few exceptions.

I have not tried it for extracted honey, so I do not know what it will do for that.

I hope all your readers will tell of their experience with it, good or bad; for if it has too many faults to come into general use, it may as well be known; and if there are more that have made it work well, I should like to know it for my sake. I hope, when they report, they will try to tell the reason of the failure, if they can. H. P. LANGDON.

East Constable, N. Y., July 20.

A HANDY TOOL FOR THE APIARY.

A subscriber, whose letter we have mislaid, sends us a drawing of a tool which he finds to be very handy in the apiary. It is simply a screwdriver and scraper combined. He says it

is very handy for prying frames apart, loosening covers, or anywhere that a screwdriver is useful. It is also handy for scraping propolis out of wooden rabbets, or anywhere that disagreeable gum finds its way. We used such an implement a year or so ago in our Shane yard, and found it very handy; but as it is a little difficult to keep track of a special tool of this kind, we concluded that it was a little more handy for us to rely upon the ever-present jack-knife. When working among the bees, we always carry one of these indispensable articles. It has a small narrow blade, for cutting queen-cells, and a good strong blade for prying up covers, etc.

OTTUMWA BEE-HIVE FACTORY.

Bee-keepers, look to your interests. Every thing in the line of bee-supplies constantly on hand. Price list free. **GREGORY BROS. & SON,**
1-23a Ottumwa, Ia. South side.

Golden Queens From Texas. My bees can not be surpassed for business, beauty, and gentleness. Safe arrival and satisfaction guaranteed. Untested queens—March, April, and May—$1 each. **50** fine Tested Queens for early orders, $1.50 each. Order early. Send for price list. 5-16db.
J. D. GIVENS, Box 3, Libson, Tex.

A COMPLETE PRINTER'S OUTFIT for newspaper and job office for sale for $350.00 cash. This sale is to reimburse the endorsers of a note, and is a rare bargain. For particulars write to E. M. COUNT & CO., New Smyrna, Fla.

WANTED.—To sell 75 colonies of Italian bees, in 8 and 10 frame 1½ and 2 story L. hives, cheap, and if bought soon, I will give honey-crop, fixtures, and all, in a never-failing locality. Address
LOUIS WERNER, B. 387, Edwardsville, Ill.

ONE DOLLAR

Will purchase a TEN-DOLLAR QUEEN by return mail.

HENRY ALLEY, Wenham, Mass.

If you wish to

Smile,

Try my fine Italian queens. Either 3 or 5 banded, bred in different yards, 75 cts. each; $4.25 for 6, or $8.00 per doz. Prices to dealers, and by the quantity, on application. Fine breeders, $5.00; always on hand. Prices for those that produce strictly 5-banded bees, on application. Remember, I guarantee safe arrival, and satisfaction in the bounds of reason.

MRS. JENNIE ATCHLEY,
Greenville, Hunt Co., Tex.

Mrs. Jennie Atchley,
Greenville, Tex.

My Dear Madam:—The nuclei reached me in splendid order, and the queen is a very fine one. You would have been delighted to hear the exclamations of delight, as the children and Mrs. L. gathered around to see the "queen Mrs. Atchley sent." I thank you for your promptness, and for sending me such a fine queen. Very truly yours,
Aurora, Tex., July 3, 1893. L. P. LOWRY.

GOLDEN ITALIAN QUEENS, 60c each, or 6 for $3.00. Italians, same price. ALBERT HINES,
Box 532. Independence, Iowa.

Read what J. I. PARENT, of CHARLTON, N. Y., says—"We cut with one of your Combined Machines last winter 50 chaff hives with 7-inch cap, 100 honey-racks, 500 broad frames, 2,000 honey-boxes, and a great deal of other work. This winter we have doubled the amount of bee-hives, etc., to make, and we expect to do it all with this saw. It will do all you say it will." Catalogue and Price List free. Address W. F. & JOHN BARNES, 545 Ruby St., Rockford, Ill.

When more convenient, orders for Barnes' Foot-Power Machinery may be sent to me. A. I. ROOT.
23tfd

Black and Hybrid Queens For Sale.

For the benefit of friends who have black or hybrid queens which they wish to dispose of, we will insert notices free of charge, as below. We do this because there is hardly value enough in these queens to pay for buying them up and keeping them in stock; and yet it is oftentimes quite an accommodation to those who can not afford higher-priced ones.

I have a number of good extra fine Italian queens, that prove not quite pure in mating, but are good hustlers, that I will dispose of at 40c each, or 4 for $1.50. C. L. HILL MFG. CO., Box 120, Dennison, O.

Hybrid and mismated queens 20c each, part this summer queens. W. W. KULP, Pottstown, Pa.

About 20 fine yellow mismated Italian queens for sale at 30c each, or 4 for $1.00. They are all young and prolific; a good majority of their bees are yellow. W. F. STUART, Box 439, Ottawa, Kansas.

Hybrid and mismated Italian queens for sale, 20 and 30c each. C. G. FENN, Washington, Ct.

Hybrid and mismated queens, 20c each. Address
C. A. BUNCH, Nye, Ind.

I have about 20 black and hybrid queens that I will sell for 25c each. W. R. TATE,
Bowling Green, Miss.

A few leather-colored and bright hybrid queens for sale at 25c each; only a few. Speak quick.
CHAS. H. THIES, Steeleville, Ill.

Bingham Perfect Smokers.

CHEAPEST AND BEST ON EARTH.

Patented 1878, 1882, and 1892.

The Doctor, 3½-inch stove, largest smoke and fuel capacity made, $2.00; Conqueror, 3-inch stove, $1.75; Large, $1.50. Postpaid per mail. They all have wide shields, movable bent nozzle, coiled steel wire handle, and inverted Bingham bellows, with Bingham cleated joints. Perfect in principle, perfect in detail, and 14 years the standard in every country.

The Bingham & Hetherington uncapping-knife also belongs in the Perfect series; $1.15.

Original, Unimproved Bingham Bee-Smokers.

Our smaller smokers are as we have always made them. Little Wonder, narrow shield, 1¾-inch stove, 65 cts.; Plain, narrow shield, 2-inch stove, $1.00; Extra, 2-inch stove, wide shield, $1.25.

They are a great convenience in handling the cone and smoke. We can recommend it to all bee-keepers as being just the thing.—Quein & Fyke, Ettawanda, Cal.

The best to be had.—C. J. Donaldson, Lapeer, Mich.

As perfect as need be.—H. M. Seely, Harford, Pa.

It is just what I wanted.—J. C. Keithley, Shacklefall, Mo.

They are a desirable attachment.—Walter S. Pouder, Indianapolis, Ind.

I would almost as lief do without the smoke as without the attachments.—Henry F. Hagen, Rocky Ford, Col.

To sell again, or rates or circular, send card to **T. F. BINGHAM, Abronia, Mich.**

FOR ALL KINDS OF BEE-KEEPERS SUPPLIES. ADDRESS LEAHY MFG. CO. HIGGINSVILLE, MO.

In writing advertisers please mention this paper.

DOVETAILED HIVES, SIMPLICITY HIVES,

SECTIONS, EXTRACTORS, ETC.

FULL LINE OF

BEE-KEEPERS' SUPPLIES.

60-PAGE CATALOGUE. 1tfdb

J. M. JENKINS, WETUMPKA, ALABAMA.

☞In responding to this advertisement mention Gleanings.

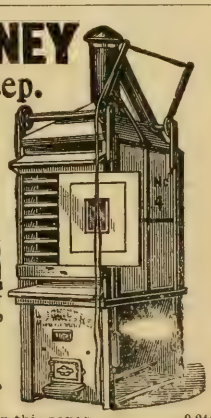
The Coming Game Bird.

The Chinese Pheasant, or Mongolian Ring Neck.

Send for descriptive catalogue to

JAS. A. SIMPSON, Alexis, Ill.

MAKE MONEY While You Sleep.



STAHL'S EXCELSIOR FRUIT DRIER

Evaporates Fruit DAY and NIGHT. Catalogue free upon application.

Address

WILLIAM STAHL EVAPORATOR COMP'Y, QUINCY, ILL.

Please mention this paper. 9-24db

Bee-Hives.

Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue 23-22db

W. H. PUTNAM, River Falls, Pierce Co., Wis.

VANDERVORT COMB-FOUNDATION MILLS.

Send for samples and reduced price list.

1tfd **JNO. VANDERVORT, Laceyville, Pa.**

For new price list of *PURE ITALIAN BEES AND QUEENS, AND WHITE AND BROWN FERRETS, ADDRESS N. A. KNAPP, ROCHESTER, LORAIN CO., O.*

Please mention this paper. 4tfdb

Muth's Honey-Extractor.

Square Glass Honey-Jars, Tin Buckets, Bee-hives.

Honey-Sections, &c., &c.

Perfection Cold-Blast Smokers.

APPLY TO

CHAS. F. MUTH & SON, Cincinnati, O.

Send 10-ct. stamp for "Practical Hints to Bee-keepers." Please mention this paper.

TAKE NOTICE!

BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH, 14tfdb New London, Wis.

READY AGAIN!

My location enables me to rear those nice Golden Queens, by Doolittle's method, as cheaply now as at any time in the North. Untested, 75c; 6 for $4.00; 12, $7.50. Last year's tested, $1.25; select, $1.75; breeder, $2.50. Safe arrival and satisfaction guaranteed.

J. B. CASE, Port Orange, Vol. Co., Fla. 5tfdb

5-Banded Golden Italians.

Three or five banded queens, each, 75c; 6 for $4.25. Nuclei and full colonies cheap. Catalogue free.

9-tfdb *Chas. H. Thies, Steeleville, Ill.*

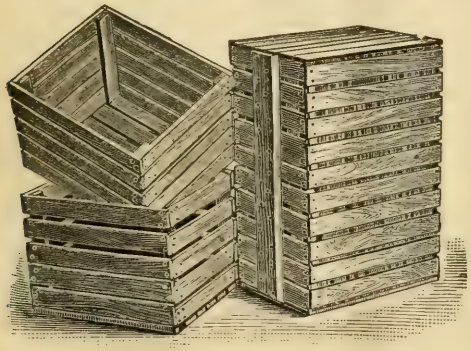
Root's Goods AT ROOT'S PRICES can be had at Des Moines, Iowa. Address Jos. Nysewander.

Eggs and Plants. Several varieties. Best quality. Any quantity. Finely illustrated catalogue free. Address GEER BROS., St. Marys, Mo., or H. B. GEER, Nashville, Tenn.

BEE-HIVES AND SUPPLIES

Send for catalogue free. Address **SAMUEL JONES,** Highland Park College, Des Moines, Iowa. 1-19db

BUSHEL BOXES.



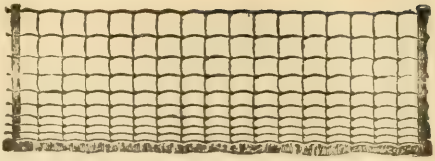
The above cut shows our new-style *all-slatted bushel box.* We have two other styles; one has slatted bottom and sides with solid ends in three pieces called the *slatted bushel box.* The other has solid ends and close bottom and sides, and is bound with galvanized iron and called the *galvanized bound box.* These boxes were devised by T. B. Terry for handling potatoes, for which purpose nothing could be handier. The potatoes are picked up into the boxes in the field and left in them till sold. Other crops, such as cucumbers, tomatoes, and apples are being handled in these same boxes. They are of such a size that two go crosswise in an ordinary wagon-box. Outside measure is 14¼x16⅞x12½ deep, and they hold a bushel of potatoes level full so they can be piled one upon another. The above cut shows two *all-slatted* boxes nailed up, and a bundle of 15 alongside; 13 of the 15 are in the flat, packed inside the other two, and nails of the proper kinds are included. The *slatted* and *galvanized bound* boxes are put up in the same way, except there are only 12 in a package instead of 15. Each package weighs about 85 to 90 lbs.

PRICE LIST.

All-slatted bushel box, per crate of 15..... ...$1 50
Slatted bushel box, per crate of 12..... ..1 50
Galvanized bound bushel box, per crate of 12....2 10

In lots of ten crates, 5 per cent discount will be deducted. Price each, nailed, 15, 18, and 22 cents, respectively. A 20-page pamphlet called Handling Farm Produce, telling all about these boxes, mailed free on application.

A. I. ROOT, Medina, O.



The Gov. of N. Carolina To Gov. of S. Carolina

"It's a long ways between posts." That's what he would say if he should see a string of our regular five-foot farm fence now serving on one side of a pasture for deer. End posts *33* rods apart, and only *one* post between. Send for particulars.

PAGE WOVEN-WIRE FENCE CO., Adrian, Mich.

☞In responding to this advertisement mention GLEANINGS

IF YOU WANT BEES

that will just "roll" in the honey, try Moore's strain of Italians, the result of 14 years' careful breeding.

Wm. Stevenson, Pasadena, Cal., says: "I have tried queens from several of the best queen-raisers, but have found none that equal your strain."

Reduced prices: Warranted queens, 80c each: 3 for $2.00. Strong 3-frame nucleus, with warranted queen, $2.50. Safe arrival and satisfaction guaranteed. Those who have never dealt with me, I refer to A. I. Root, who has purchased of me over 600 queens. Circular free.

J. P. MOORE,
11-12d *Morgan, Pendleton Co., Ky.*

☞In responding to this advertisement mention GLEANINGS.

5-Banded Golden Red-Clover Bees.

If you want bees that will work on Red Clover, try one of our five-banded queens. Queens in July, untested, 75 cts.; ½ doz., $3.60; tested, $1.50; select, $2; the very best, $4. Descriptive circular free.

LEININGER BRO'S, Ft. Jennings, O.

Please mention this paper. 5tfdb

50 cts. each for untested queens from best imported mothers. **W. C. Frazier, Atlantic, Iowa.**

TESTED QUEENS 80 CTS. I requeen my whole yard every year, and now again offer about 50 fine Italian tested queens at 80c each, or two for $1.50. Mismated queens at 30c each. My queens are equal to the best. By return mail. *T. H. KLOER,*
14-1fbd 426 Willow St., Terre Haute, Ind.

Eastern Supply House.

We furnish everything used in the apiary, and at bottom prices. Illustrated circular free.

I. J. STRINGHAM, 105 Park Place, N. Y.

21 20db Please mention this paper.

Cash for Beeswax!

Will pay 21c per lb. cash, or 24c in trade for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 28c per lb., or 30c for *best selected wax.*

Unless you put your name *on the box,* and notify us by mail of amount sent, I can not hold myself responsible for mistakes. It will not pay as a general thing to send wax by *express.*

A. I. ROOT, Medina, Ohio.

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SPECIAL NOTICES.

HONEY MARKET.

We have received a good deal of new honey since our last report, both comb and extracted, all of very choice quality. We are able to offer it at the following prices:

Choice white comb honey, in 1-lb. sections, mostly 24-lb. cases, 1 to 3 cases, 17c per lb.; 4 to 9 cases or over, 16c per lb. Write for prices on 50 cases or over.

Choice clover extracted honey, in 60-lb. cans, 2 in a case—one 60-lb. can, 9c per lb.; 1 case of 2 cans, 8½c per lb.; 3 cases of 2 cans or over, 8c per lb.

We hope to have Western honey to offer in our next issue.

SPECIAL 10 PER CENT REDUCTION FOR 30 DAYS ON

WIRE NETTING,

SHORT ROLLS, ETC.

We submit below, corrected from last issue, a list of the short rolls and remnants of wire netting that we have received from the factory. We still have a good supply of 2-inch No. 19 netting 4 feet high, which we still offer at these special prices: 1 roll, $3.60; 5 rolls, $17.50; 10 rolls, $34.00. This you notice is 10c a roll higher than our last offer on this size. We have the 3-inch Nos. 19 and 20, 60 and 72 inches wide only, other widths all sold. We have put the price on the following pieces at the same rate as full rolls, except on the 72 inch, on which we offer an extra 10% discount.

Of 2-inch mesh No. 19 wire, we have the following remnants and short rolls at ⅞c per square foot. The figures at the left give the width in inches, and the other figures give the length of each piece in feet. Multiply this by the width in feet, then take two-thirds of the result to find the price of each piece.

30 | 45, 50, 60, 62, 64, 70, 90, 91, 101, 107, 123, 137, 140, 144, 146.
36 | 9, 16, 18, 18, 19, 26, 38, 40, 40, 40, 49, 50, 50, 53, 54, 55, 56, 58, 64, 73, 73, 73, 74, 75, 82, 83, 84, 84, 87, 90, 90, 92, 94, 96, 96, 96, 99, 115, 100, 100, 100, 100, 100, 100, 102, 102, 102, 105, 105, 109, 110, 111, 114, 143, 116, 118, 120, 120, 122, 124, 124, 125, 125, 128, 129, 129, 138, 142, 142, 143, 144, 144, 147, 147.
42 | 20, 131.
48 | 11, 20, 25, 29, 32, 35, 38, 40, 48, 55, 55, 61, 67, 68, 75, 75, 82, 83, 84, 86, 87, 90, 94, 96, 119, 120, 122, 123, 123, 124, 130, 138, 138, 140, 143, 103, 144, 144, 144, 144, 145, 145, 145, 146.
54 | 72, 88, 88, 143.
60 | 53, 78, 96, 101, 101, 101, 105, 107, 110, 120, 123, 124, 138, 140, 144, 144, 146, 146.
72 | 16, 20, 42, 42, 42, 47, 48, 57, 71, 73, 75, 75, 81, 82, 85, 85, 88, 93, 100, 100, 112, 119, 120, 123, 124, 125, 134, 142.

Of 2-inch No. 20 we have the following pieces at three-fifths of a cent per square foot. Arrive at the price in precisely the same way as above, taking three-fifths of the number of feet instead of two-thirds, to get the price in cents.

30 | 32, 39, 73, 105, 120, 140, 140, 140.
36 | 22, 38, 39, 56, 57, 66, 79, 81, 88, 100, 100, 100, 110, 119, 120, 122, 126, 128, 128, 134, 136, 138, 140, 141, 144, 145.
42 | 142, 143.
48 | 41, 55, 60, 66, 70, 85, 86, 92, 98, 105, 114, 140, 143, 145.
54 | 145.
60 | 46, 48, 60, 73, 119, 139, 139.
72 | 25, 38, 44, 45, 70, 75, 76, 79, 100, 100, 128, 137, 139.

☞ In lots of 5 pieces, any one or assorted kinds, deduct 5%; 10 pieces, 10%; 25 pieces or more, 15%. On the 72-inch netting you may also deduct 10% on single-piece orders; or, in addition to above, on quantity orders. First come, first served. Generally these pieces go off very rapidly, and it may be well to name a second or third choice in case your first may be gone.

A. I. ROOT, MEDINA, O.

Wants or Exchange Department.

Notices will be inserted under this head at one-half our usual rates. All advertisements intended for this department must not exceed five lines, and you must SAY you want your adv't in this department, or we will not be responsible for errors. You can have the notice as many lines as you please, but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices of offering articles for sale, can not be inserted under this head. For such our regular rates of 20 cts. a line will be charged, and they will be put with the regular advertisements. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—Winchester shotgun or offers, for a trio of English Beagle hounds three months old, two females and a male. The best rabbit hounds on earth. D. S. HALL, So. Cabot, Vt.

WANTED.—To exchange Perfection winter cases, fit any hive, 12 and 24 lb. honey shipping-crates, one-piece sections, foundation, etc., for extracted and comb honey, or offers. Any quantity.
C. L. HILL MFG. CO., Box 120, Dennison, O.

WANTED.—To exchange a farm of 60 acres, large new buildings, fruit of all kinds, plenty water; land level and fertile, for bees and supplies.
J. O. MUNSON, East Lansing, Tompkins Co., N. Y.

WANTED.—To exchange a solid-tire Juno Ladies' bicycle, bought new last fall, for 350 lbs. of good clover honey in tin cans.
A. W. SMITH, Shelton, Buffalo Co., Neb.

WANTED.—A first-class photograph outfit. Must be in good order. Write me at once.
SCOTT BRILLHART, Millwood, Knox Co., Ohio.

WANTED.—To exchange a $10 plater for offers. Plants of Begonia Vernon for plants or offers.
B. THOMAS, Boyer, Wright Co., Mo.

WANTED.—To sell or exchange for honey or offers, one Shipman oil-engine, 2-horse power, used but little. Address
E. M. TENNANT, Willett, Cortland Co., N. Y.

WANTED.—To exchange safety bicycle and gold watch for bees, queens, supplies, or offers.
BERT W. HOPPE, Garden City, Kan. Box 224.

WANTED.—To exchange a new parlor lounge worth $15, for honey, wax, L. combs, or offers.
AUG. HILLMANN, 290 13th St., Brooklyn, N. Y.

Black and Hybrid Queens For Sale.

For the benefit of friends who have black or hybrid queens which they wish to dispose of, we will insert notices as below, first insertion free of charge. After the first, 10c per line. We do this because there is hardly value enough in these queens to pay for buying them up and keeping them in stock; and yet it is oftentimes quite an accommdation to those who can not afford higher-priced ones.

I have got 4 hybrid queens, good ones, that I will mail to any one for 25 cts. each, any time before the first of September. Speak quick.
CALVIN C. PHELPS, East Windsor Hill, Conn.

A few mismated and hybrid Italian queens of this and last year's rearing, 25c each, or 5 for $1. Most have one one wing clipped.
JESSE F. SMITH, Liberty, Clay Co., Mo.

Fifteen black and hybrid queens at 20 cents each. Order at once.
W. H. LAWS, Lavaca, Seb. Co., Ark.

A few more hybrid and mismated Italian queens for sale at 20 and 30 cts. each.
C. G. FENN, Washington, Litchfield Co., Conn.

A few beautiful Italian queens that are mismated, by return mail at 30c each.
S. P. RODDY, Mt. St. Marys, Md.

HONEY COLUMN.

CITY MARKETS.

CHICAGO. — *Honey.* — The receipts of honey are quite liberal; the very best grades are bringing 15@16. The demand just now is hardly equal to the supply, and we are receiving many inquiries concerning the market. We are of the opinion that it will not be any higher, but may go lower, as money is very scarce, and people seem to economize in the way of honey purchases. The darker grades are not meeting with any demand. Nearly all of the new crop is of very fine quality. Extracted is bringing from 5@7, according to color, flavor, and style of package. Beeswax is very dull at about 20@22 per lb. R. A. BURNETT & Co.,
Aug. 7. 161 So. Water St., Chicago, Ill.

CHICAGO. — *Honey.* — Honey this year is being placed on the market earlier than last season, but the demand is restricted and will be light until small fruits are out of the market; and with the prospect of a large crop, buyers will be particular as to quality, and the best will find ready sale upon arrival. No. 1 comb, 16; extracted as to quality, 5@7. Beeswax, 22@24.

We extend to all bee-keepers who visit the city an invitation to call on us, likewise to make use of our office, in care of which they can have their mail addressed, and from which they can write their letters. Hotel accommodations secured.
Aug. 4. S. T. FISH & Co.,
189 So. Water St., Chicago, Ill.

ALBANY.—*Honey.*—Although the honey market is not fairly open yet, we are receiving a few lots that sell well, and indications are that honey marketed early this year will bring best prices; especially comb honey. We are selling white comb, 15@17; medium, 14@15; dark, 12@13. Extracted moves slow yet, although white is not plentiful, and sells at 7½@8; amber, 7@7½; dark, 6@7. Beeswax quiet, 26@28. Write us for prices when any are ready to sell; your correspondence solicited, promptly and cheerfully answered. H. R. WRIGHT,
Aug. 3. 326, 328, 330 Broadway, Albany, N. Y.
P. S.—Honey a specialty; sales last season, 200,000 pounds.

ALBANY.—*Honey.*—We have already received 10 consignments of comb and 4 consignments of extracted honey. Comb honey is moving off freely considering that it is still very early, and weather warm. We quote white clover, 14@16; buckwheat, 11@12. There is but very little demand for extracted yet. From present indications the crop of buckwheat honey will not be very heavy throughout New York State unless we get rain soon.
Aug. 11. CHAS. MCCULLOCH & Co.,
Albany, N. Y.

NEW YORK.—*Honey.*—Our market remains very quiet. Extracted continues to arrive freely, the market is well supplied, and the demand light. We quote: Southern common, 60c gallon; fair to choice, 65@75c per gallon; California, 6@6½c per lb. No new comb arrived as yet. Beeswax, 25c, and gradually declining. HILDRETH BROS. & SEGELKEN,
Aug. 10. 28 & 30 West Broadway, N. Y.

NEW YORK.—*Honey.*—Some new crop, white clover honey, arriving, selling at 14@15 for fancy 1-lb. sections. Extracted, slow of sale. Southern in bbls., 60@65. California, 6½@6¾. Beeswax, prime, clean and good color, is worth from 26@28 according to quality; trade is very quiet.
Aug. 7. THURBER-WHYLAND Co.,
New York City.

BUFFALO.—*Honey.*—There is not sufficient demand as yet to warrant the encouragement of shipping much honey to Buffalo just now. Three to four weeks later, probably a little sooner, we can handle some few sales. No. 1 comb, 1-lb., 14@15, occasionally 16. No. 2, 12c downward. No sale for extracted yet. When demand thoroughly sets in we can handle a hundred tons or more. BATTERSON & Co.,
Aug. 7. Buffalo, N. Y.

CINCINNATI.—*Honey.*—Prices for comb honey are nominal, with small lots of new on the market. The best sells at 14@16 in a jobbing way. Extracted honey brings 5@8. Demand from manufacturers is slow, arrivals fair. Beeswax is in fair demand at 20@23 for good to choice yellow.
CHAS. F. MUTH & SON,
Aug. 7. Cincinnati, O.

KANSAS CITY.—*Honey.*—Receipts of honey, light, with a fairly good demand. We quote: 1-lb. comb white at 17; 1-lb., light weight, 15; extracted, white, 7½; amber, 6½@7; dark, 5@5½. Good demand for extracted. Beeswax, none on the market.
HAMBLIN & BEARSS,
Aug. 7. Kansas City, Mo.

KANSAS CITY.—*Honey.*—Receipts more liberal; demand fair. We quote: 1-lb. comb white, 16@17; 1-lb. amber, 12@15; extracted, white, 6@7; amber, 5@6. Beeswax, 18@20.
CLEMONS, MASON & Co.,
Aug. 8. Kansas City, Mo.

MINNEAPOLIS. — *Honey.* — Our honey market is as follows: Extra fancy white, 1-lb. comb, 18; extra choice, white, 1-lb., 16; fancy dark, 1-lb., 14; choice dark, 12; strained honey in 20-lb. kegs, 8. Demand light. J. A. SHEA & Co.,
Aug. 7. Minneapolis, Minn.

ST. LOUIS.—*Honey.*—There is very little doing. Demand very light. No change in values. Prime beeswax, 23. D. G. TUTT GROCER Co.,
Aug. 8. St. Louis, Mo.

DETROIT.—*Honey.*—Best white comb honey, 14@15; demand increasing. Extracted, 7@7½. Beeswax, 23@24. M. H. HUNT,
Aug. 7. Bell Branch, Mich.

BOSTON.—*Honey.*—New honey is coming in slowly, selling 16@18 for best one-pound sections. Extracted, 8@9. No beeswax on hand.
BLAKE & RIPLEY,
Aug. 7. Boston, Mass.

WANTED.—Comb and extracted honey, best quality only. WALTER S. POUDER,
175 E. Walnut St., Indianapolis, Ind.

WANTED.—500 lbs. dark extracted honey.
H. G. CAMP, Winona, Ohio.

WANTED.—Comb and extracted honey, white clover. F. S. MCCLELLAND, New Brighton, Pa.

WANTED.—To buy 50,000 lbs. of white comb honey in small single-tier cases.
B. WALKER, Evart, Mich.

FOR SALE.—3000 lbs. of choice white honey in 1-lb. sections, 24-lb. cases, and 3000 lbs. of fine extracted clover and basswood honey in 60-lb. square jacket cans. Samples by mail on application.
EZRA BAER, Box 1873, Dixon, Ill.

5000 lbs. extracted honey, 2000 of clover and 3000 of linn, in 300 to 500 lb. lots. Honey is excellent. What do I hear bid for the lot?
J. B. MURRAY, Ada, Ohio.

BUFFALO, N. Y. Unsurpassed Honey Market.
BATTERSON & CO. Responsible, Reliable, Commission Merchants. 18tfdb **and Prompt.**

CHAS. ISRAEL & BROS., 110 Hudson St., N. Y.
WHOLESALE DEALERS & COMMISSION MERCHANTS. *Honey and Beeswax.*
Established 1875.

White SHIPPING-CASES.
To have your honey sell well, use our beautiful cases, 12 and 24 pound sizes. Send for illustrated catalogue of every thing needed in the apiary.
M. H. HUNT, Bell Branch, Mich.

Root's Goods for the West.
Address Jos. Nysewander, Des Moines, Ia.

FLORIDA. For Sale—ten acres of good land, five in young grove, part bearing; house, barn, and out-houses, apiary, and store building, with stock of general merchandise. Apply to
H. P. WILLIAMS, Richmond, Lake Co., Fla.

Experiments

With Langdon's Non-Swarmer, Pratt's Self-Hiver, different makes of foundation, both old and new, light and heavy, are being made at the Michigan Experimental Apiary. Swarms are being hived with starters only in the brood-nest, upon foundation, and upon drawn combs Bees, hives, cases, etc., are all being carefully weighed. Other experiments will be taken up as the season advances; at all times of the year will experiments be under way. The **Bee-Keepers' Review** gives full reports each month of these experiments. Send 75 cts. and the Review will be sent from July (when the Experiment-Apiary reports began) to the end of the year, and with it will be sent the 50-ct. book, "Advanced Bee Culture." Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Mich.

PORTER BEE ESCAPES are used and pronounced a great labor-saving implement by **Chas. Dadant & Son, Prof. A. J. Cook, Chas. F. Muth, Jno. S. Reese, J. H. Martin, John Andrews, F. A. Gemmell, Wm. McEvoy, A. F. Brown, Thomas Pierce,** and many other prominent bee-keepers. Descriptive circular and testimonials mailed free. **PRICES:**—Each, post-paid, with directions, 20c.; per doz., $2.25. *Return them and get your money back after trial if not satisfied.* For sale by dealers. Address **R. & E. C. PORTER LEWISTOWN, ILL.**

Queens Yellow to the Tip.

Great big yellow beauties, worth many times their weight in gold. That is the kind of queens Trego raises.

Who Buys Them?

Geo. E. Hilton, W. Z. Hutchinson, W. S. Hart, J. F. McIntyre, Jas. A. Green, and about 500 others not so well known. For the rest of the season there will be very few drones near me except very yellow ones, and nearly every queen should get 4 and 5 banded bees.

"Morocco, Ind., July 24, 1893.

"S. F. Trego:—I have bought queens of ——, ——, and —— [he names three prominent breeders, S. F. T.], and yours are the *best in every respect.* Geo. Zobaroskey."

Mr. Z. ought to know something about my queens, as he buys them by the dozen.

One warranted queen, $1.00; six for $5.00. Money-order office, Cable, Ill.

S. F. TREGO,

Swedona, = = = Ill.

☞In responding to this advertisement mention Gleanings

Now Ready.

Untested Italian queens, 75 cts. each. The golden or leather-colored kind. Also bee-keepers' supplies. Send for circular.

JOHN NEBEL & SON,

High Hill, Mo.

☞In responding to this advertisement mention Gleanings.

FRIENDS,

I have a fine strain of Italian bees, and my apiary will be located six miles from other bees, so perfect mating of queens is assured. Will be pleased to receive your orders. Prices are as follows:

1 untested queen,	$1.00	6 untested queens,	$4.75
3 " "	2.75	12 " "	6.50

Tested queens, each, $1.50

Safe arrival guaranteed. Address

A. S. PARSON,
SUCCESSOR TO FRANK HOWARD,
GARDEN CITY, KAN.

☞In responding to this advertisement mention Gleanings.

PATENT WIRED COMB FOUNDATION

Has No Sag in Brood-frames.

Thin Flat-Bottom Foundation

Has no Fishbone in the Surplus Honey.

Being the cleanest, it is usually worked the quickest of any foundation made.

J. VAN DEUSEN & SONS,

Sole Manufacturers,
Sprout Brook, Montgomery Co., N. Y.

Oh, Mamma!

Have you heard of the

FREE

200-Page Bee-Book

given to every **NEW** Subscriber to the old

AMERICAN BEE JOURNAL?

Oldest, Largest, Best, Cheapest and the only **Weekly** Bee-Paper in America. 52-pag s; **$1** a year. *Sample free*

GEO. W. YORK & CO

56 Fifth Avenue, CHICAGO, ILL

To new subscribers: the journal alone sent for 3 months for 20 cents.

Great Reduction.

Sections at greatly reduced prices. Hives, Shipping - cases, etc., at Bed - Rock Prices. Write for free Illustrated Catalogue and Price List.

G. B. Lewis Co.,

Watertown, = = = Wis.

1tfdb Please mention this paper.

QUEENS.

Queens, either 3 or 5 banded, 75 cts. each; ½ dozen, $4.25; 1 dozen, $8.00. Breeding queens, $2.00. Circular free.

J. F. MICHAEL, German, Darke Co., O.

Please mention this paper

BIG DISCOUNT on Foundation and Sections. Thin foundation, 50 cts. per lb.; brood, 40 cts. No. sections, $2.75 per M. Every thing cheap, price list free. E. H. Trumper, Bankers, Mich.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
PUBLISHED BY A. I. ROOT MEDINA OHIO
$1.00 PER YEAR

Vol. XXI. AUG. 15, 1893. No. 16.

STRAY STRAWS

FROM DR. C. C. MILLER.

WHITE CLOVER at Marengo yielded honey 5½ weeks, closing July 20.

A FEW SEASONS like the present and I shall have to get a new stock of sections.

BROOD-COMBS 1⅜ in. from center to center leave a bee-space of ⅜ to ½ inch where brood is raised, being nearly double that left at the upper part where the sealed honey is.

R. F. HOLTERMANN, the new editor of the *Canadian Bee Journal*, is a live bee-man and an enthusiast, and ought to give the Kanucks a wide-awake, practical bee-journal.

COMBS OF HONEY were put into my shop-cellar during fruit-bloom, for the bees to clean out. Except an occasional bee, they wouldn't touch it till the close of linden and white clover. Then they made short work it.

THE LARRABEE ESCAPE is nearly as good as the little mosquito-net tents to put on top of a pile of supers, and is handier. It has the advantage over other escapes for this purpose, that it lets more light through.

WHAT MAKES the terribly offensive smell that sometimes comes in hives, like that from dead mice? This year it was just at the close of linden and white clover, but I don't know whether it was at the same period other years.

ONE ADVANTAGE, and not a slight one, that a record-book has over any system of temporary markings, such as stones on a hive or slates, is, that you can refer to your book years afterward. In this way the experience of a past year can be drawn on for future guidance.

I MEASURED the space left between sections without separators. As nearly as I could measure, it was a quarter of an inch. When separators were used, the same space, ¼ inch, was left between the face of the comb and the separator. Is this the uniform measurement, or do the bees vary?

A NEW BEE-ESCAPE from R. J. Stead, of Canada, strikes out in a new line; keeps the bees shut up in the super for half an hour or so till they get crazy to get out, then lets them all out like a flock of sheep. If it always works as well as during the one trial I have given it, it will stand at the head for rapid work.

W. C. FRAZIER thinks many reach conclusions too hastily—"go off at half-cock." Cases reported of worker eggs changed to drones, and queens raised from some of the unchanged eggs, would, he thinks, if patiently investigated, prove to be the work of laying workers, and the supposed queens to be nothing but drones.

I HAVE BROOD-COMBS that have stood outdoors in hives for two years without being troubled by worms. They stood unoccupied without any protection of any kind, and might stand thus for many years after being through the first winter's freezing. But they get very dry and brittle. They keep in better shape in a dry cellar.

"ONCE A ROBBER always a robber," seems to be the traditional belief with regard to bees. I don't believe it's correct. Don't you know how robbers will sometimes whip you out, and then the very next day not trouble at all? They haven't all died in the meantime, have they?—just gone to honest work, a fresh flow of honey having started.

THE WORD "BEE," in addition to the various ways in which it is used in different languages as given in last GLEANINGS, has the following, for which I am indebted to W. P. Root, the man who puts my commas in the right place and straightens out my English: Hungarian, *mehe;* Roumanian, *albi;* Slovak, *v'cha-la;* Servian, *p'cha-la;* Turkish, *ahroo.*

THE GOOD YIELD of honey, it seems, has not been universal. July 17, E. Kretchmer, of Iowa, had received no response to 1000 circulars sent out asking for honey for the World's Fair, and reports not a single colony of his own bees working in sections. A correspondent south of me in Illinois reports no surplus from clover, and some colonies nearly out of honey.

MY PUNIC HALF-BLOODS (I have two colonies) have proved themselves good workers, although cross, their most prominent characteristic aside from the glossy black color of the drones being their manner of filling sections. No air seems to be left between the honey and the capping, giving the sections a disagreeable, greasy appearance, the worst I ever saw. For comb honey they're no good.

THE OTHER DAY I saw a laying worker laying in a worker-cell. She looked very uncomfortable with her wings all pushed up about her head, and I suspect that accounts for the fact that laying workers always prefer drone-cells. They are more comfortable. Then they keep on laying over again in the same cells, rather than to take the more narrow and uncomfortable worker-cells.

A HYBRID COLONY may sometimes prove to have better workers than a pure one; but it doesn't follow from this that it is better to breed from the hybrid. There is not the fixed type in the hybrid that there is in the pure

blood, and it can not be relied on to reproduce itself. I'm not saying by this that careful breeding may not fix a valuable type of hybrids, but I doubt if such a one exists that equals the pure Italian.

I don't know for sure, but I am of the opinion that queenless bees will store honey almost if not quite as well as those having a queen, provided they have empty combs to store in. But if comb has to be built, queenless bees seem a good bit behind. At any rate, after a good deal of experience with caged queens and queenless colonies in harvest time, I am strongly of the opinion that I never want a colony working in sections to be without a queen for a day.

ROBBING.

DOES IT OCCUR DURING THE HONEY SEASON?

A correspondent wishes me to tell him, through the columns of Gleanings, whether bees are subject to robbing during a flow of honey, and writes thus: "I see it recommended in a certain book that we should not try to remove the surplus honey from the hive immediately after a shower, in the honey season, for fear of robbing, thereby causing the bees to become very cross; the reason therefor being given, that the shower has washed the honey from the flowers, hence the bees are eager to rob. Do you find this so? With me the bees do not offer to rob till a day or two have elapsed after the bees have been gathering honey plentifully."

I would say that bees *are not* subject to robbing during a honey-flow, for this is the time, above all other times of the year, when they can fly, that they are the least inclined to rob. My bees act just as the correspondent says his do, for I never knew bees out in search of honey immediately after a heavy rain which came in the height of the honey-flow. During a heavy yield of honey the bees seem almost glad of a rest for at least 24 hours, especially if the weather is dull. I have taken off hundreds of times immediately after a shower, without being bothered by the bees trying to rob in the least. At such times each bee is so full of honey that, if squeezed a little, it will throw the honey out on its proboscis; and if jammed a little too hard the honey-sac (filled with honey) would burst through the sides of the abdomen. When bees secure honey rapidly, each bee takes all it can into its honey-sac, then throws it out on the tongue, draws it back again, then throws it out again, and so on to evaporate the watery part of it; for all nectar, when gathered, is so thin that it needs much reducing before it is of the right consistency to be sealed over. After all the thin nectar has been evaporated, then the bees begin to look around for more; and if the flowers fail to secrete any, robbing is the result where honey is left exposed; and all wise persons will avoid leaving honey exposed at such times. It takes about the length of time spoken of by our correspondent to reduce all the thin nectar in the hive to the consistency of honey after it has rained during a good honey yield.

BLACK BEES; HOW LONG DO THEY LIVE?

Another correspondent wishes me to tell "how long the German (or black) bee will live." This all depends upon the season of the year when the trial is made, and the condition of the colony. If in the summer or working season, 45 days will be about the length of life the worker-bee will enjoy; while if during the fall and winter months, the time will be found to be from six to eight months. For instance, if we take away a black queen about the middle of June, and introduce an Italian queen in her place, we shall have Italian bees hatching 21 days thereafter, which date we are to mark on the hive as the time we are to count from, as there will be no black bees hatched after this. At the end of 40 days the black bees will be found to be very few in numbers, while at the end of the 45th day not a black bee will be found in the hive. If the colony is made queenless at 20 days after the Italian queen was introduced, then the length of life to the workers will be prolonged, on account of their not laboring so hard, for queenless bees never have that energy shown by those which have their mother with them; and it is the amount of labor done which has to do with the length of life given to our pets. Again, if the change of queens is made during the fall months we shall find plenty of black bees in the latter part of spring, although they soon disappear after the active labor of honey-gathering comes on. This length of life has much to do with spring dwindling, with preparation for winter, making new colonies, our surplus crop of honey, etc., and therefore should be understood by all. It is impossible to secure a good crop of honey where the most of the bees are nearly worn out with age just as the harvest is commencing; and where bees become uneasy in winter, and wear themselves out with worry, spring dwindling is sure to occur. So, all old bees in the fall will result in empty hives the next spring; and a divided colony, so made that one part contains all old bees results in no profit from that part. Let us be practical along these lines.

IMPORTED QUEENS BETTER THAN HOME-BRED.

I am asked by another party what I think of the claim made by some, that imported queens are superior to those bred in this country. I do not think that any proof can be found to substantiate such an assertion. In fact, I believe the balance of proof is on the other side. Very many have written me that they would not exchange their home-bred queens for imported stock on any account, as their honey-yields are much increased above what they were when they first obtained Italian queens from the old country. Queen-breeders on the other side of the water do not take the pains in breeding that we Americans do; for, if I am correctly informed, the most of the queens sent over here, unless it is very lately, are from a promiscuous selection, mostly taken from second and third swarms, on account of these swarms not being liable to winter. How much different the mode practiced by our best breeders! Queens are selected for generations, each selection being made from those which are the most hardy, and give the best results in every way; then the very best specimen is selected from the next generation, and so on, always selecting the queen each time which scores the highest number of points, till perfection is well nigh reached. It seems strange that any one can believe that queens from a promiscuous importation will equal queens bred with such care and painstaking. Where people are not satisfied with the stock they have, my advice would be, for all those so situated, to buy an imported queen, if they think them superior, and a home-bred one from some reliable party, and try the two equally, rearing as many queens from one as from the other, when they soon can tell which is the best for them. If they do not choose the home-bred queens, then I am greatly mistaken. G. M. Doolittle.

Borodino, N. Y.

RAMBLE NO. 90.

AT BRODBECK'S; DEVIL'S CANYON, ETC.

It would be a very interesting study for some patient antiquarian to look up all the various names, formations, and peculiarities of the thousands of canyons in this great State. Like "Old Mortality" among the graveyards of Scotland, he would grow gray before he could complete the job. In this State, among the various distinguished personages whose names are attached to canyons is that of the Devil. Devil's Canyon has its entrance near the town of San Bernardino; and from the number of saloons, and wickedness generally, in that ancient town, I should judge that the canyon was rightly named, and fully occupied by his satanic majesty. I had some curiosity in relation to that canyon, and, in answer to my many questions in relation thereto, a resident of the country near said that its wild and rough nature was one reason for its name; and, furthermore, that it was a very unlucky place in which to travel. Deaths and serious accidents had been of frequent occurrence; hunters have been found dead, or with broken limbs; horses have suddenly died; dogs utter long and unearthly howls, and animals of all kinds have a subdued aspect. My informant said that he never went through the canyon without a mishap of some kind, and he regarded it as an evil locality.

Although Devil's Canyon bears such an unenviable reputation, it has no visible manifestations of its nearness to the infernal regions below; but if we travel a little distance to the east, and climb into the mountains, we find all these visible manifestations; and hot water, steam, and sulphurous fumes greet us on every side; but here, instead of stumbling upon misfortune at every step, the traveler finds pleasure; and if an invalid, he finds healing for his disease; and the portion of the earth upon which we stand is widely known as the Arrowhead Hot Springs. The name is derived from an immense Indian arrowhead embossed, as it were, upon the almost perpendicular side of the mountain—the mountains here having an elevation of several thousand feet. The great sign, 1360 feet long and 450 wide, is plainly visible from nearly all portions of the valley below, and from the Santa Ana Mountains, 30 miles away. As a curiosity it is as great as the "Old Man" on Mount Washington, in New Hampshire, or the "Holy Cross" in the mountains of Colorado. This sign was here when the white man first made his appearance upon the scene, and it is supposed to have been made by Indians hundreds of years ago to indicate the location of the springs, which were held in high repute by them for their healing powers. It is also said that the Mormon chief, Brigham Young, had a vision of this region, and sent a body of his followers to make a settlement here. They were instructed to travel until they should find the figure of an arrowhead upon the side of the mountain. After much hardship in crossing mountain and desert the weary emigrants found the sign and a permanent restingplace in the fertile valley below. Thus San Bernardino came into existence as a Mormon town, and there is still enough of the element here to support a church of the Latter-day Saints.

Ever since I entered the valley, nearly two years ago, I had desired to visit the place, and render my impressions to your readers through camera and pen. Our friend Mr. Brodbeck, of Los Angeles, having located an apiary in the immediate vicinity, I have taken the first opportunity after the busy season to pay my respects to him and Mrs. B. in their new and romantic home.

Mr. B. met me at Arrowhead Station, and at the first glance I found that outdoor life had given him a good healthy tanned skin, and I felt that he was one of us; and it also seemed more appropriate to talk bees with him out where the bees were humming than it would be in a drygoods store.

It required but a few minutes to find that Mr. B.'s horse was made after the same plan as Mr. McIntyre's, and it was necessary to push on the lines some in order to get him along. The owner also, like McIntyre, is a very indulgent driver, and Prince had nearly his own way, and he seemed to enjoy it, for it was a very warm day. It is a pleasure to say right here, while I think of it, that bee-keepers, as a general rule, and so far as my observation goes, have good horses, and they show good treatment. Truly, the bee-keeper is a merciful man.

When we left the station I remarked that it was about a mile to the point of the arrowhead.

"Yes," said Mr. B., "it is a good three miles, with some sharp grades to get up at that;" and, sure enough, our journey proved that, in this case, as well as in many others in this country, the vision is no guide with which to judge distance. When we arrived upon the mesa, near the point of the arrowhead, we found that the hotel, which you can also see from the valley, is a very commodious and elegant building, patronized by tourists and invalids from all parts of the world. It has been established several years, and the grounds are finely shaded with gum and pepper trees, while the open spaces are beautified with various-hued flowers found only in this climate. The manager of the institution, Dr. W. Chapman, looks to the comfort and well-being of his many visitors. The elevation of 2000 feet above sea-level, shaded walks, the sound of rushing water in the canyon below and in the fountain near the hotel make it a desirable retreat from the heat and dust of the valley. From the hotel veranda a magnificent view is obtained, and the many thriving towns over a great area of country are plainly visible. We find here, close by, a cold-water and a hot-water canyon. The extremes meet in one common canyon below the hotel

ARROWHEAD MOUNTAIN, WITH HOTEL IN THE FOREGROUND, CALIFORNIA.

In the hot-water canyon we find the greatest wonder of the place—the hot and boiling medicinal springs. The principal and oldest spring is about three feet in diameter and one foot deep. The water bubbles up at a temperature of 193°, or within 19° of the boiling-point. It is a favorite practice to boil eggs in the spring. After an immersion of about ten minutes they are cooked hard. Mr. B., upon one of our journeys to the spring, provided the eggs and tea, and we had the pleasure of having our cooking done in what Mr. B. termed Mother Eve's tea-kettle; and what a nice provision it would be if the bachelors of California could have such an institution in their cabins! It would take away half of the vexations of cooking. As it is at present, a Mother Eve's tea-kettle means a Mother Eve to take care of it, and bachelors are not equal to such a situation.

A further stroll down the canyon revealed many other springs steaming from the fissures of the rocks, and the rocks themselves were hot from internal heat. Water from the cold-water canyon is brought in pipes to the bottom of the gorge, where there is hardly room for the little building, and under sufficient pressure to run a dynamo, giving light to the hotel and surrounding buildings. Several home-made Pelton water-wheels are also in use for pumping water and various other purposes.

Invalids indulge in mud baths, vapor baths, and, in fact, baths of all kinds, to suit their various ailments. The advantages claimed for a mud bath consist of the poultice operation of drawing out the disease. That these baths are of great benefit is attested by the fact that many persons afflicted with rheumatism have made their permanent abode in some of the surrounding cities in order to be near the curative agent. A mud bath, it is said, is a very agreeable and soothing experience. My rheumatism, however, would have to become quite acute to induce me to get into one.

The great arrowhead upon the side of the mountain gives an opportunity for every kind of business that is established within ten miles of it to prefix the word and represent themselves as an Arrowhead company. Thus at one time there was an Arrowhead Honey Company. The business was to be conducted on the nickel-plate style. The hives were placed in long sheds, and the stands were provided with anti-ant-climbing supports, with various other fixtures in the same line; but the Arrowhead Honey Company was a failure, and ruins of the enterprise are all that is left of it. Mr. Brodbeck secured the right to place an apiary near the grounds occupied by the former company, and, having collected over 80 colonies in various nondescript hives, and transferred them to new L. hives, they were successfully moved by rail and wagon to their mountain home. His apiary is within ten minutes' walk of the hotel, in a beautiful wooded dell where you will next be taken by the RAMBLER.

TWO USEFUL INVENTIONS.

THE PORTER BEE-ESCAPE AND THE FLANSBURGH SCREEN BRIDGE A SUCCESS.

For a number of years I have been and am still a reader of GLEANINGS. Among the many useful appliances invented by bee-keepers during its existence are two, which to me are indispensable. The first is the bee-escape invented by R. & E. C. Porter, Lewistown, Ill. This little automatic device for ridding bees from surplus boxes, etc., to any extensive bee-keeper producing comb honey, is as indispensable as is the movable-comb hive to improved bee-keeping. If I should have to be deprived of its use, and also of the use of the screen bridge, invented by me a few years ago for cleaning section boxes on, I should choose to give up bee-keeping in my advancing years because the escape lessens labor, and the bridge keeps the sections clean, and saves time.

Before using the screen bridge I had to stop frequently to brush away the scrapings and wipe up dripping honey in order to keep the sections clean; but with the screen bridge both are avoided, as the scrapings and drips both go through the screen, and you keep your sections clean, and save the time of brushing away the debris. Shortly after I devised it I gave you a description of it, and was surprised to receive by return mail from you $2.50. I described its use for you and other bee-keepers producing comb honey, expecting you would manufacture them for sale.

TO MAKE THE SCREEN BRIDGE.

Get out four pieces, 2x½ inches; two pieces 11 in. long; two pieces 12 in. long; nail the ends of the pieces together so when nailed you have a square frame 12 in. each way. Get a piece of tinned wire cloth, cut 13 in. square, of about No. 14 wire, ½-inch mesh; fold the edges ½ in. over the edges of the frame; tack the edges outside the edges of the frame with small wire-netting staples; lay the screen on your table, and clean off your sections on it and be happy.

In a former issue of GLEANINGS I noticed that B. Taylor has invented a machine for rubbing or melting down partly drawn-out cells in section boxes, to be used the following season. I will give you a description of mine and how I do it. When the day is cool and the comb is brittle, I take a section in the left hand, holding it in a horizontal position, the fingers of the left hand supporting the comb on the under side; use the index finger of the right hand for a demolisher; rule off the drawn or partly drawn-out cells down to the septum on both sides of the comb; scrape them with a sharp knife on the inside and out, on the screen bridge described above, and they can be used with profit. G. J. FLANSBURGH.

South Bethlehem, N. Y., July 17.

[The screen bridge referred to by our correspondent is no doubt a good thing. We presume the reason we did not make them in the first place was because they were so easily constructed that any one could make them. We find, however, we have in stock what is called our ten-cent ash-sifter. It is a shallow tray, or box, 2½ inches deep and a foot square, with a wire-cloth bottom, with half-inch mesh. These sifters are madeby the carload, and are sold at retail for only 10 cts. Of course, if sent by mail the postage will be extra. They can be used for their legitimate purpose of sifting ashes; or, if turned upside down, they may be made to answer as a bridge for holding sections while they are being scraped.

By the way, we should like to inquire here what sort of devices our comb-honey producers have been using for supporting the sections while being scraped. It would not do to set them on a bench, because the scrapings would adhere to the sections. Perhaps some have been using a barrel with coarse wire cloth stretched over the top. Please tell us how you do it, for within the next 30 or 60 days a good many sections will be scraped, and we shall want to know the best way of doing it.

Referring to friend Flansburgh's method of reducing the cell-walls to the septum, we would say that, no doubt, it can be done as he describes; but the B. Taylor implement is very much superior, both in point of speed and quality of work.]

THOSE OLD BEE-BOOKS.

ANOTHER PEEP AT THE "GOOD OLD TIMES."

The next book that claims attention has a title that is "all Greek" to me, for it is a Greek word printed in large Greek letters. It may be spelled in English, "Melisselogia," meaning *a discourse on bees*. The title continues: "Being an enquiry into the nature, order, and government of bees; with a new and easy method to preserve them, not only in colonies, but in common hives, from that cruel death to which their ignorant, injurious, and most ingrateful owners so commonly condemn them." The author's name is Rev. John Thorley, of Oxford. "London, 1744. Sold at the Angel in the Poultry, Cheapside." Something besides "angels" gets into poultry around here.

This book contains 208 pages, about the size of this, printed in large clear type. It contains a considerable number of copperplate engravings, of a very high order. The first one represents three bees, each 2½ inches long, and drawn with wonderful fidelity. It gives a view of the bee from above, beneath, and from the side. Except for the bands on the bees the picture would be a credit to a modern bee-book. Another plate tells us what a storifying hive was in those days. It consists of four eight-cornered hives, one on top of each other. The top one contains comb; under that we find the queen; under her, in his own hive, the drone; under him the worker. The whole hive reminds one of a concertina, and perhaps worked tolerably well. It seems rather top-heavy for windy weather, however. No mention of a frame is made as now used.

The author of this book had handled bees for forty years when he wrote; and his chief motive in doing so, apparently, was to counteract some of the infidelity of his time. He speaks of his day as "an age of reigning infidelity, when vice and immorality are under no restraint, but practiced with impunity, and without control, triumphing over all laws, both human and divine; when men not only attempt to degrade and villify the Sacred Oracles; look on the gospel as no better than a cunningly devised fable, and the most important truths as the greatest impertinences, and treat the blessed Author of our religion as a vile and wicked impostor, and even deny the being of God." This was the time when Wesley was beginning to beat back the torrent of skepticism which seemed even worse in the church (so called) than out of it. Voltaire's doctrines had poisoned the minds of even the elect, but yet many stood firm. Mr. Thorley tries to show God through the works of nature. The following quotation lacks nothing of sublimity: "Who, but a being of infinite perfection, could raise so noble and glorious canopy as these visible heavens, beautified and embellished with sun, moon, and stars? or lay such an area or floor as this terraqueous globe on which we tread and in which we fail—furnished with so great a number of proper inhabitants? An humble and serious view of these would lead men to the acknowledgment of a Supreme Being who formed both." Infidelity has assailed England as, perhaps, it has no other land; but Christianity has never yet been torn from its anchorage there.

In this book the names of about 500 persons appear who are "subscribers" to it; that is, they agreed to support it. Among these names I am pleased to see that of Philip Doddridge, the author of many of our best hymns.

In speaking of the incomparably greater skill shown in a bee-sting as compared with human works, Mr. Thorley describes some of the latter as follows:

"The author of Baker's Microscope says he saw in London a chaise made by Mr. Boverick, a watchmaker, with four wheels, and all the proper apparatus belonging to them, turning easily on their axles; together with a man sitting in the chaise; all formed of ivory, and drawn along by a flea. The whole weighed barely one grain. The same artist also made a quadrille-table, with a drawer in it, an eating-table, side-board table, a looking-glass, twelve chairs with skeleton backs, two dozen plates, six dishes, a dozen knives, as many forks and spoons, two salts, a frame and casters, together with a gentleman, lady, and footman, all contained in a cherry-stone, and not half filling it."

The argument from the above is, that the microscope shows that God has made a million times more than these things, and put them into a millionth of the space they occupy; and that, no matter how much we magnify, we find God has been at work before us, and that an infinity of his wonders can live and move in the eye of a needle as freely as the planets circle round the sun.

In speaking of the sex of bees our author seems to be in doubt, and says, "The decision must be left to future time, and to the generations which are to follow." Huber was born six years after this, and unraveled the mystery. Mr. Thorley reviews all the writers I have mentioned, in the vain hope of discovering what a drone is for. He concludes that, as colonies increase all summer without drones, "we may very justly draw the conclusion that drones are not males, neither have they any instrumentality in the generation of bees." [Laughter.] Here are some more of his conclusions:

Bees do not breed by copulation; common bees are neuter; they can not fill a hive with their own kind; without a queen-bee they can not breed.

O happiness! how far we flee
Thine own sweet paths in--
The make-up of a honey-bee!

Medina, Aug. 9. W. P. R.

DO BEES GATHER SYRUP FROM FIGS?

WHERE THE "HOLY LAND" BEES CAME FROM.

Fig-trees are suggested for plantations by one of your correspondents on page 527, July 1. Although some kinds of figs will have a drop or so of syrup at the opening, when the figs are really past maturity, I think bees will never profit much by that. In Palestine, figs are grown to a great extent in some parts of the country; and an apiary that we had very near Bethlehem was near fig-orchards. Part of them had their roots above the water, and consequently the fruit was a good deal more syrupy; and bees, in fact, visited them, but never any great harvest was had from them; while the trees planted along the mountain-side, far from water, are more solid. The fruit, although juicy, does not exude that sweet drop which, in fact, is considered as prejudicial to the fig. All around Bethlehem, fig-trees abound; and bees have been abundant there many years; but since all the environs have been planted to olive-trees, fig-trees, and vines, apiculture is impossible; and I do not know whether a bee-hive still exists there.

About two miles from Bethlehem there is an old citadel, and three big pools, said to have been built by Solomon. They are called by the Arabs, Solomon's pools. They supply Jerusalem with water—or, at least, they were built for that purpose, and the aqueduct still exists leading to the midst of the temple in Jerusalem. You

know, the place where the temple of Solomon stood is now occupied by a mosque built by one of the followers of the first Mohammedan conqueror of Jerusalem, Abd-el-Malek; still, as Omar Ben Chaber, the conqueror of Jerusalem, first built a small wooden mosque there, the beautiful building now there bears the name "Mosque of Omar." The Mohammedans call it the "Mosque of the Rock." The rock is believed to be the altar on which Abraham was ready to offer Isaac. But, to go back to our bees in the citadel. At the head of Solomon's pools and Solomon's sealed fountain, referred to by the king in Solomon's Song, 4:12, is a citadel to protect the waterworks. A garrison was kept there, from time immemorial. Gradually this has melted down to one soldier, or, rather, Turkish irregular "Bashi-bazuk." In the citadel, bees have been kept also. My father had bees there for nearly forty years. In fact, the first Holy-Lands imported to America by Benton and Jones came from this place, whence they have been transported to Mt. Zion, and where the above-named gentlemen visited them. In the vicinity are fig-orchards too, but bees never gather any honey there, nor do they do so in the Greek convent northwest of it—"St. George's insane-asylum." All these bees gather honey from the thyme, abounding in the mountains of Judea. The honey is taken from the hives at the feast of the cross, Sept. 15, and figs go on ripening till October; but no surplus honey is gathered after September, this being very late, for thyme ceases to blossom at the beginning of August. I'll send you, as soon as I can get them ready, a few views of the citadel and waterworks, combined with the bees.

PH. J. BALDENSPERGER.

Nice, France, July 21.

PAINT FOR BEE-HIVES.

PAINT SLIGHTLY TINTED WITH YELLOW OCHER, VS. PURE WHITE PAINTS.

I notice in GLEANINGS for July 1st that you have changed your base on the paint question again; and I must say I think you "flop around" on this question the worst of any one I ever saw. The first 12 years of my bee-keeping I used pure white lead and oil; but for the last four or five years I have used a paint made of pure white lead and yellow ocher, as described and offered for sale in GLEANINGS, and I am much pleased with the ocher and lead paint. White lead is bound to chalk or scale off, while the ocher and lead paint will do neither. My object in changing the color of paint in my apiary was to save my eyes, which the reflection of the white on the hives was going to put out; and I find that the yellow does not hurt them. You say that dark paint draws heat. This is so; but what if it does? I have some 30 hives painted a jet black, and the bees suffer no inconvenience so far as I can see. My object in painting black was to see if the bees would winter or spring any better in dark hives; but I can see no difference. One color is just as good for the bees as the other. My hives are chaff packed in single hives. Color would have more effect; but the light straw color, as described and advertised in GLEANINGS, will be all right on any hive; will cost much less and last twice as long. GEO. A. WRIGHT.

Glenwood, Pa., July 15.

[From the experiments we made last summer in this matter, placing hives side by side, one of the pairs being painted with pure white-lead paint and the other with pure lead tinted with ocher, we found that there was considerable difference in the relative temperature of the cover-boards on very hot days. The yellow covers were so hot that we could not bear our hands upon them, while the white were very comfortable. Remember, these hives were side by side. The same sun was shining upon them the same day. We observed, also, that the colony in a yellow-tinted hive was fanning harder than the one in the white hive; for you remember that bees regulate the temperature of their hives by artificial currents which they make with their wings. Now, we do not take back one word we said in favor of the qualities of the ocher paint, and its tendency to harden and render more durable any pure-lead paint; but yellow is what is called by painters a "warm" color. The actinic (or heat-giving) rays seem to have a decided affinity for yellow—more so than for other pale tints. While *our* bees will get along very comfortably, there are localities where bees under yellow covers or in yellow hives would be seriously inconvenienced. Shade-boards might obviate the trouble; but in our wanderings among bee-keepers we find that shade-boards are rarely used. Now, there is another pigment that is, in its way, as durable as lead; and that is zinc. Experienced painters tell us that the most durable *white* covering is a coat of pure lead on the wood as a primer; then a coat or two of zinc and lead, mixed half and half. Pure white lead alone is liable to chalk. Pure zinc alone will flake. Combining the two we get a paint that neither flakes nor chalks; therefore, for bee-keepers' use we have decided to "flop" back again to pure white paint; and we therefore recommend pure lead for a priming coat; and for second coat, zinc and lead, both strictly pure, half and half. While the ocher tint—that is, a pure lead hardened up with a slight amount of ocher—may be more durable, the slight advantage gained in point of lasting quality is more than overbalanced by the fact that it is a warm color; and as a pure white paint put on in the above combination is about as lasting, we have decided to recommend it in preference to the other, even if we do have to "back water."

Now with regard to "flopping." Should we not be excusable on the ground stated on page 613? Does it not give evidence of candor? You remember we said that an experimenter who never changes his opinion is one whose opinion should not be trusted implicitly.]

THE NUMBER OF BEES IN A POUND.

HOW IT WAS FIGURED OUT BY PROFESSOR KOONS.

Friend Root:—In GLEANINGS for July 15 I saw the question asked as to the number of bees in a pound. Therefore I went to my apiary and took one bee from each of ten swarms, taking care to capture the bee as it came out of the hive, presumably intent upon an excursion for honey; for thereby I should be more likely to get all in a like condition, honey-sac empty, etc. I have pure Italians and hybrids; and in selecting the colonies from which to take each bee I took care to visit some of each; however, in making up the following table I paid no regard to whether the bee was Italian or not. I took the bees and placed them immediately in my cyanide-of-potassium jar for killing insects; and as soon as they were stupefied, which required but a very few minutes, I weighed them, thereby securing the bees as nearly as possible in their normal condition and weight. In our laboratory we have delicate chemical balances, capable of weigh-

ing an object much less than a millionth of a pound. Upon these I weighed each of the ten bees separately, and from these weights it was a simple problem in arithmetic to determine how many of the same size as each it would require to make a pound of bees. The following are the results:

No. 1—4141	bees	in	lb.	No. 6—4866	bees	in	lb.
" 2—4335	"	"		" 7—4936	"	"	
" 3—4420	"	"		" 8—5291	"	"	
" 4—4476	"	"		" 9—5551	"	"	
" 5—4670	"	"		" 10—5669	"	"	

From the above you will see that, of the largest bee, it would require 4141 to make a pound; and of the smallest, 5669; and an average of all these ten would require 4832, which, perhaps, it is safe to say is a fair average of bees in general. I should be glad to get the extremes. If any have very large or very small bees, and will send me a dozen, I will weigh and report upon them. B. F. Koons.

Connecticut Ag'l College, Storrs, Ct., July 28.

[We are greatly obliged to Prof. Koons—not so much because he has given us any *new* facts, but because he has corroborated with accurate instruments the estimates that have heretofore been made; namely, that a pound of bees, on an average, contains *about* 5000 bees; and this, we believe, is the number we gave in answer to our correspondent. Some eleven years ago E. E. Hasty, with scales of his own devising, verified these results very closely. See Gleanings (Juvenile), page 61, 1882. We do not now sell bees by the pound; but knowing the number in a pound, and knowing the average number of pounds in a colony, we can approximate very closely the number of bees that go to make up that colony. We have bought swarms that weighed 9 lbs.; but the average of good swarms, such as we used to buy of the farmers when they brought them in (for we always bought by the pound), weighed about 4 lbs.; so that there may be anywhere from 20,000 to 25,000 bees in a fair colony. Perhaps Prof. Koons would be interested in ascertaining the average weight of a bee-load. Mr. Hasty found that one bee could carry of honey considerably more than its own weight. His scales showed that, of unloaded bees, there were 4666 to the pound; and of those loaded, there were only 1832.]

A NEW SOLAR WAX-EXTRACTOR.

B. TAYLOR TELLS HOW HE USES ARTIFICIAL HEAT TO HELP.

What a nice thing it would be for every bee-keeper if he could have a solar wax-extractor for turning waste scraps of combs, and big pieces too, for that matter, into nice yellow wax, provided it would really do the work in good shape! I have tried nearly all the machines in the books, mentioned for that purpose. We always had lying around large quantities of big and little pieces of waste combs that were either melting in the sun, or, what was still worse, furnishing breeding-places for the bee-moth, that disgusting nuisance of the bee-keeper, and which we may well name "the bee-keeper's plague." But none of said machines gave entire satisfaction. They were slow and uncertain in operation. We made one on a large scale that took a glass 2x5 feet to cover it, the machine costing $10.00; but it did not prove to be what we needed, and I gave it to my daughter to set in the cellar to keep bread and other foods secure from mice and roaches. All the machines tried would work to some degree, under favorable conditions, but they all had one radical fault—lack of sufficient heat at the bottom.

This summer we went to work to conquer this "Petersburgh," even if it took the whole season; and after lying awake some time, for several nights, studying over the problem, we went to work. We procured a large tin dish-pan; made a hole in the bottom near the edge; soldered in a half-inch tube two inches long to convey the wax into a dish below. We next cut a circular piece of tin a little larger than the inside of the bottom of the pan; cut a piece out of one side, running to a sharp point at the center; drew these edges together, riveted them so as to have the center raised, in pail-cover fashion; trimmed down the edge to stiffen it, and laid it in the bottom of the pan. This cirlar piece is to keep the waste from the bottom of the pan, and to prevent choking the flow of wax.

We next took a glass as large as the top of the pan; put a sash around it, said sash being just large enough to go over the top of the pan and let the glass rest tightly on top of the pan. The extractor proper was now complete. We next made a can out of galvanized iron, something like an extractor-can without bottom, two feet high, and large enough in circumference so the extractor-pan would go into it half up its sloping sides. We wired the bottom end of the galvanized can, but left the top end sharp so it would fit the extractor-pan tightly. When pushed down properly inside of the galvanized can we cut a square hole, 6x8 inches, 6 inches from the bottom, and covered it with a movable slide. We next set the bottom can on a suitable board bottom and screwed it fast as you do your extractors. This can we now set in a protected corner on the south side of our shop, where the sun would shine most of the day, and set the extractor-can in the top of it, with the hole for the escape of wax at the south side, with a suitable vessel in the lower can for catching the wax. We set the lower can level, but the round sloping sides of the extractor-pan allowed it to be set at any needed angle to face the sun properly at different times of day, and the circular sloping sides of the pan keep it constantly in focus as the sun moves around. We next took a small hand oil-stove, that costs 75 cents here, and, lighting it, uncovered the square hole in the lower can, and set it in beside our pan for catching wax, leaving the door half open to give the stove needed air; filled the extractor with a quantity of combs, replaced the glass, and went into the shop to await the new birth. After a little time we returned to examined the new babe. Eureka! a bee-keeper's savior is surely born! Carry the news to Medina! The old black combs were gone, and the dish below was filled with splendid yellow wax. You can change the pitch of the pan to any needed angle in a moment by tilting the extractor-pan in the top of the open can below. This extractor will do the work certainly, and to perfection; can remain stationary for all time; is cheaply made; will not get out of order. Good-by, old carts. You have served your time. Adieu, old rheumatic friend. I shall make one of the new extractors on a large scale, mount it on our abandoned revolving hive-stand, where it will remain as a permanent fixture, and where it can be kept facing the sun at all hours by turning the hive-stand by a touch of the hand.

Before closing, let me say that the honey crop here is fair. We put 24 colonies into our new house last spring, but four proved queenless, leaving 20 colonies. We made new colonies from these to fill the house, and it now contains 38 colonies. On these hives we have used to date 105 supers of 24 sections, and 90

per cent of them are filled with splendid capped clover and basswood honey to-day, and with half the honey season here yet to come. Why should we cry? The comb-leveler is to be charged with a large share of this mischief. The non-swarming hives are working nicely, and I hope to settle the non-swarming problem; but I shall not halloo until I know I am out of the woods for certain. B. TAYLOR.

Forestville, Minn., July 27.

QUEEN-CELLS FROM DRONE COMB.

VALUABLE HINTS FROM J. D. FOOSHE.

Friend Root:—I wrote an article some few days ago, giving the plan that I liked best for queen-rearing, in which I said that I preferred the cup plan; but before writing I had been experimenting with royal jelly by smearing the bottom of the cup with it; but it was a little awkward to apply. Since then I have struck on to a plan by which royal jelly can be applied to the cells, and the cells grafted will live, at least two out of three, and that without the cups having to hang in a hive for the bees to glaze the bottom; and, would you believe it? also a plan to do away with the cups entirely by using drone comb for the purpose. Cut drone comb in strips and paste on bars, known as the Alley plan. I usually use three. Apply royal jelly to as many cells as needed, and hang the frame in the hive made queenless and broodless a few hours previous; but graft the cells immediately after applying the jelly or it will become dry and hard in a short time. These cells should be grafted at intervals, so when cut out they will leave other drone-cells on the bars for further use until all are used up, when they may be renewed. Rather shallow cells are better than the deeper ones.

The process of applying the jelly is this: Take a goose-quill, say 3 inches long; cut about two-thirds of its length about half away, forming a trough to hold jelly. Take a small wooden paddle and dip the jelly from any cell having been started about two days. Remove the larva and rake it into the trough, and, when ready to apply it (which should be at once after taking it from the cell), take a wire nail, holding the quill in the left hand, and, with the right, cut off as much with the head of the nail as wanted in a cell, and push it in to the bottom. The jelly in this way sticks only to the head of the nail toward the bottom of the cell.

There are two advantages in the jelly. 1. It seems to suck or pull the larva from the point of the instrument used, as soon as it touches it; 2. It is a suggestion to the bees as to its purpose. I don't think they use this jelly so much in feeding, but it answers the purpose to float the larva. Only a little in each cell is needed—enough to cover the bottom.

In putting the bars into the frame to receive the cells for the purpose, they should be fastened at each end with only one nail, so that they can be turned at any angle to suit the operator.

I give you this as I think it will prove valuable to me. For aught I know others may have adopted the same plan for cups; but if so I have not seen it; so if there is any thing new in it you may publish it. By adding young bees once a week, and feeding gradually, the same colony can be induced to rear queens for an indefinite length of time, provided the cells are taken from the bees before they are capped, and let them (the bees) remain so for five or six hours; they then realize their helpless condition. I believe that, with proper care, and placing a colony in proper condition by feeding, etc., we can rear about as good queens out of season as in swarming season. I don't claim that we always do it, but that it can be done.

Coronaca, S. C., July 22. J. D. FOOSHE.

HONEY FROM CUCUMBERS.

CUCUMBERS A VALUABLE CROP TO RAISE.

We have a "pickle-factory" here that does a large business, and gardeners and truckers plant hundreds of acres of cucumbers annually to supply it with green "pickles." The vines are now loaded with beautiful yellow bloom, which the bees daily visit, and which, when the weather is favorable, yields considerable honey. They also yield a rich yellow pollen which assists the bees greatly in building up for the fall harvest.

The honey from cucumbers, although generally limited in quantity, is of good quality, being of a rich golden color, and of good flavor, resembling very much the famous orange honey of California and Florida.

Cucumbers begin blooming at a time when there is very little other bloom, and not only serve a good purpose in assisting brood-rearing, but, continuing to bloom all through the month of August, they help to swell the supply of fall honey, and afford some excellent food for the bees to winter on. Besides affording pasturage for the bees, cucumbers are a source of much profit to those who engage in their culture, and furnish employment to hundreds of people in picking, and afterward in sorting and handling them in the factory; so that, taken all together, they are a valuable crop to raise. This year the factory pays 50 cts. a bushel for the green pickles; and as it costs only 15 cts. a bushel to have them picked, this leaves 35 cts. for the producer, fully half of which is clear profit. They will yield ordinarily about 200 bushels per acre.

Notwithstanding the fact that certain physicians have pronounced them a useless factor in our diet, I regard them as a pleasant relish and good appetizer, and as for such they are chiefly used I would pronounce them a valuable culinary adjunct. Then, too, the honey they yield is *all right.* W. J. CULLINAN.

Quincy, Ill., July 31.

A QUERY.

WHY ARE BEE-MEN SO GENERALLY GOOD?

I have often wondered at the difference, especially of character, between people of different professions. In thinking along this line, the question that oftenest presents itself is this: "What is there in bee-keeping that has so happy an effect on the moral nature of those who follow it for a livelihood?"

Perhaps you have never thought much about it; but are not most bee-keepers of your acquaintance honest, honorable, even Christian people? I don't mean by "bee-keeper" every one who owns a hive of bees, and perhaps sets great store by the old idea that bees work for nothing and board themselves, but that one who gives a fair proportion of his time to the care of an apiary—who is acquainted with his bees and his business.

What a contrast such an apiarist and a cattle-raiser present! Does the business make the difference? Or, were the ranchman and the apiarist always or naturally people of thus different temperaments, and choose their respective professions because of this difference?

Or will neither of these questions bring out the truth? But however accounted for, the dissimilarity has long made and still continues to make itself very noticeable. Notice the tone of those old bee-books W. P. R. has been reviewing to our edification. If you are acquainted with books on live stock, you can not fail to be struck by the difference of the authors' style and spirit.

I am aware that the entire quota of the goodness rightfully belonging to the manipulators of the royal family is not equal to the sum of human goodness (I am not a bee-keeper myself); but take note of the uniformly good character of the apiarist—big, little, and indifferent—of the bee-editor; of bee-men and bee-women generally; contrast it with that of the members of other rural or mechanical professions, and account for it if you can. Jesse W. Newell.

Farmersville, Ill., July 10.

NON-SWARMING ATTACHMENTS.

E. KRETCHMER EXPLAINS THE CAUSE OF THE REPORTED FAILURES.

Friend Root:—I have just read some of the difficulties encountered by several parties with the Langdon non-swarming attachment, which so nearly correspond with the troubles I encountered while using a similar arrangement in 1891, and which, we think, we have here in our apiary entirely overcome.

One of the causes of swarming is in attaching it too late after the bees have the swarming fever. We now overcome this by making the *first* change back after three days. Another is, insufficient ventilation. At first we gave additional ventilation by setting the bee-controller ⅛ inch from the hive; later we constructed ventilators through the controller, but we soon found the chief cause of swarming arose from insufficient ventilation of the supers, and evaporation of the honey in the uncapped cells. When but one super is placed on the hive, the vapor is removed by fanning it out at the entrance, with considerable loss of labor; but think how much greater the labor must be when four or five supers are placed on one hive, with no increase in the size of the entrance, while the amount of vapor to be removed is not only fourfold in quantity, but the distance from the upper super to the entrance is also greater; all of it must be forced in an opposite direction, which, by the action of heat and atmosphere, rises instead of falling. The bees, unable to stand the almost suffocating vapor, desert the hive. It is not what I understand the word "swarming" means, as, under the circumstances above described, no queen-cells are started until after the queen has left the hive. I obviated this trouble by raising the roof and placing a ten-penny wire nail under each corner, which raises it enough for ventilation, yet admits no bees. To show my assistant what quantity of vapor does escape through this crevice I placed some ice in a glass globe with closed cover, and, after it became cool, I held its smooth sides near the opening under the roof, and I must confess it even surprised me to see what a large quantity of moisture condensed against the cool glass, just near the opening under the roof. When this condensing-glass was placed near the entrance of a colony, about equally strong, with the same number of supers and no upward ventilation, the amount of moisture condensed against the glass from the entrance was not one-fourth as much.

I am, therefore, of the opinion that, as soon as these special manipulations are more thoroughly understood, we shall have fewer reports of failures. E. Kretchmer.

Red Oak, Iowa, July 25.

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

THE CHEAP PAPER ESCAPE.

The cheap paper bee-escape, described in Gleanings, Jan. 1, 1893, I find will not work when there is a lot of drones and very young bees in the supers. I am sorry for not discovering this fact sooner, especially since so many agricultural papers have copied the article. But you see I had very little early honey the past two seasons, and therefore none to take off until late, when every thing favored the escape, such as cool nights, etc. But I am glad to give you and the readers of Gleanings a plan that will clear supers of bees so quick that the average bee-keeper can afford (for the fun of it) to stand and watch them pop out and make a bee-line for home. The plan is, to place the supers to be cleared of bees on a bottom-board, with the entrance against that of the hive (cover up securely against robbers). Now for the escape: Stretch a light curtain across the entrance in such a manner that it will swing outward only. Probably the easiest way to accomplish this is to allow half an inch or so of the curtain to trail outward, or lie flat on the alighting-board.

To make this escape (those who have loose bottom-boards handy), nothing is required but a two-inch strip of very thin muslin, as long as the entrance, and a stick, or a stiff wire that will reach across for a roller.

Will the editor please take a few minutes' time and make one? Fasten it in front of the exit of a super filled with bees; place it up against, either in front or side of the entrance of the hive. You will have to wait only a few minutes when you will see a sight that will remind you of a lot of little pigs in a garden with a dog after them, and only one place to get out. John Handel.

Savanna, Ill., July 29.

CLEATED HIVE-COVERS, ETC.

Friend Root:—Gleanings came to hand the 10th. In regard to the honey-crop in this vicinity I will say that it is very spotted. Some apiaries will make nearly half a crop, while others seem to be just making a live of it. I don't think the average will be a quarter unless things take a very favorable turn, which is hardly possible at this stage of the game. My own bees will probably make half a crop.

In regard to the cleats on the hive-covers, I think the present way of making them is much better than the diagram published in Gleanings for July 1st. If the cleat is nailed solid—that is, in more than one place on each cleat, the board will not be left free, as at present, to expand and contract with the changes in the weather; consequently the board will crack and split. I make my covers and cleats out of redwood, and have no trouble from splitting. I fasten the cleats to the covers with one screw in each end, which is the usual way, I think.

In regard to the size of sections, p. 528, if Mr. John Kersteiner, and a few others, will only just keep quiet for a while, the whole swarm, from bee-man to buyer, will settle on the 4¼x 1⅞ section; then we can hive the whole lot, and every thing will be lovely. Bro. Kersteiner is very mathematical—too much so for my bees. If a section 12x12x4.5 cm. will hold just a

pound of honey, I wish he would just go ahead and tell us how to prevent the bees putting a little more than a pound into the section during a good honey-flow; and, *vice versa*, during a scant flow of nectar. My bees are now putting 17 or 18 oz. of honey into the 4¼x1⅞ section; later they will put less than a pound into the sections. How can we help it? A. B. MELLEN.

Acton, Cal., July 12.

CULLING OUT UNDESIRABLE QUEENS.

In kindness to those who can not afford to lose a good honey-flow by poor stock, I urge that GLEANINGS continue to insist upon my motto: Supersede any queen that will swarm out from under empty sections, and raise no daughters from her, provided the super is all right. To learn this, cost me some dollars in years gone by. This year I have a daughter of an imported queen to supersede (a magnificent queen) on account of contrariness in comb-building. Another daughter is a splendid comb-builder, but she does not finish her sections until a long time on the hive, and always leaves a few uncapped cells, with unfinished spots around the edges.

Another daughter of the same imported queen built but few burr-combs, even with the old saggy frames; finished her sections neatly all around the edges as she went along; swarmed once; left just one queen-cell behind her, went to work like tigers in the new hive, drawing out my brood foundation; worker-cells clear to the bottom-bar. I need not tell you I am taking eggs from that queen for all superseding. Of course, when I speak of the queen doing work I mean her bees, her household, her army, the same as Grant took Vicksburg.

Ingram, Pa. PHILO S. DILWORTH.

FLAT COVERS WARP.

In a late issue of GLEANINGS you ask if the flat covers of the Dovetailed hive warp. They do in early spring, here. I have 20 of the first you made, and 40 you made the next year. Many of the end-cleats are cracked so that I will use them for bottom-boards, as they are unfit for covers now. Warping causes but little trouble during the summer months; but in the early spring it allows the heat to escape, and sometimes the robbers get in. As a remedy I would suggest that you use a cutter-head in grooving these end-cleats, cutting them smooth. Before nailing them, give the end of the cover-board and groove in the cleat a good coat of paint; this will keep the water from swelling the joints, which, in my opinion, is what cracks the end-cleats and weakens them, allowing the board to cup. If I use any more flat covers I will test this. E. F. QUIGLEY.

Unionville, Mo., July 27.

[Any one can, just before putting the cleats in the covers, paint the groove and the end of the cover. This, doubtless, would be quite an improvement in localities where there is trouble from warping.]

THE FERGUSON QUEEN-CAGE—HOW DO THE BEES GET TO IT?

I do not understand how the bees are to get into, or the queen get out of, Ferguson's cage, pictured on page 566. Please explain it. From the picture, I think it a tight wire box with cover. E. D. HOWELL.

New Hampton, N. Y., Aug. 1.

[We had not noticed, until friend Howell called our attention to it, that our engraver made a mistake in showing the Ferguson cage on page 566. The blocks A A should have come up flush with the wire cloth, and an opening should have been made through the wire cloth at B. The space between the two blocks should then be filled with candy. The bees enter between the two points A A, and eat out the candy up as far as the perforated zinc C. Here they gain access to the queen. After the bees have become acquainted with her in small squads at a time, the candy will, in the mean time, have been eaten out, so the queen can pass between the sticks and escape from the cage.]

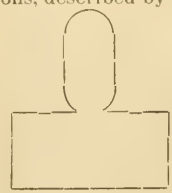
THE JENKINS CAGE FOR INTRODUCING.

We wish to call your attention to one thing. We have been using a little queen-cage made by J. M. Jenkins, Wetumpka, Ala., for an introducing-cage, for three seasons, and have never lost a queen with it. Can you account for it? We believe it is because the queen will not come out of this cage as readily after the candy is eaten out as she will most of the other cages in use. You know with the Benton cage, and almost all others, that, when the candy is eaten out, the bees are out. It is not so with this cage (the Dixie), with the hole in the wire screen. With this cage the candy is eaten out, and the bees enter the cage; but there is no danger of their hurting the queen while she is in the cage, and she can not find the hole in the center of the wire very easily, and she will remain in the cage so long as there is any danger. If that is not the secret, we do not know what it is; but we do know that, when we put queens in with this cage, we are just as sure to find them laying in five or six days as that we put them there. CLEVELAND BROS.

Decatur, Miss.

PUTTING IN STARTERS BY HAND.

I saw a novel way of putting starters in sections, described by Rambler, and I think I have a way that is as good, or better, for small fry, as one does not have to fit up any thing. Just place the sections on a table in the flat, groove side up, and cut starters the desired size, and place at the left hand. Take a piece of wood in the right hand, made as in diagram, and kept wet. Place a starter on one section, and press down with the paddle; then put a starter on No. 2, and press; go across them all in this manner. Then begin at the last one and fold up the section, placing in a super so the starter will hang down; and the weight of the wax, if the room is warm, will bring it into place. I find this very rapid, and it does not require a perfect cut of the edge of the starter, as it does when glued in. M. C. DIMICK.



Bowling Green, O., July 29.

THE TOMLINSON CLOSED-END-FRAME HIVE; QUESTIONS ANSWERED.

A. I. Root:—I feel like returning you many thanks for your notice of my "Ideal" hive in your Trade Notes. It would destroy, in a great measure, the utility of the hive to have the rods put in the other way—to press the frames together. To loosen the frames sidewise requires a good deal more room or loosening capacity than endwise. Only a very few turns of the nuts loosen the sides—say ⅛, or, at most, ¼ of an inch; while, to remove the frames apart easily, requires ½ to 1 inch or more. Wedges close the frames together much more rapidly than screws, and are equally efficient.

You do not see how the end-board is wedged up against the frames left in the hive after

contracting the brood-nest. Simply by wider wedges; or, if several frames are taken out, by sticks cut off the required length.

One of the chief advantages of compressing the brood-frames endwise is, that the frames may be perfectly even, so that the ends of the frames shall present on the inside of the brood-nest a surface as smooth as a board, allowing no projections for propolis. I think you are much mistaken in regard to the durability of the hive-cover joints. JULIUS TOMLINSON.

Allegan, Mich., July 22.

HONEY AND—CIRCUSES.

Basswood is in full bloom here, but I don't think the bees are doing as well on it as they did on white clover. We have got more honey this season than we got all together in the last three years; but if we do not get some rain soon we shall not get any more honey this year.

CIRCUSES.

Mr. Root, I am glad some one is not afraid to give an opinion of circuses. We went to one the other day. It was the Irwin Brothers' show. I wanted the children to see the menagerie. They had only a few animals; but, oh such wicked gambling that was going on in the side show! My heart ached as I looked on and saw young men and boys lose their hard-earned dollars trying to beat a man at his own game. Those gamblers took in hundreds of dollars in a few minutes. How I wish all of the people in this world could take GLEANINGS! You seem always to hit on the right subject. I don't know how many times we have opened our new GLEANINGS and found in the Home talks the same subject that we had just been talking on. It is really remarkable. MRS. F. T. HALL.

Barron, Wis.

BEES ORNAMENTAL AS WELL AS USEFUL.

I thought, up to July 1, that keeping bees out here on the open prairie was a purely ornamen- a pastime. Since then I have had reason to change my mind, as every surplus box is full of honey gathered, I believe, from horsemint and a yellow nettle. I need an extractor badly, and would have ordered one, but the freight charges are enormous. However, I will get one early in the spring. I think by that time I shall have inaugurated a bee-fever around here, as it has already broken out. I live only sixty miles west of Mrs. Jennie Atchley, of Greenville.

J. HARRY WILSON.

Orphan's Home, Tex., July 28.

BEES DYING FROM SPRAYING WHILE TREES WERE IN BLOOM.

My bees did finely, considering the loss by poisoning during apple-bloom, from spraying with Paris-green water by farmers across the White River, west of the city. I lost no colonies; but my best, that had the early morning sun, got very weak. Such as were more in the shade did not suffer much. For three days my garden was literally covered, every inch of it, with wriggling and dying bees. On Monday following, a big rain stopped it.

GEO. L. HOLLENBACH.

Noblesville, Ind., July 20.

[Spraying does little or no good if done on the full bloom. It should be done after the petals have fallen. Then there is no danger to the bees. Your neighbors need educating.]

WHAT SHALL WE DO WITH THE BARLEY IF WE STOP DRINKING BEER?

Bees are entirely idle for the past few days. The weather is very dry; vegetation is suffering badly. A good deal of the corn, and many potatoes, are drying up. We shall not get much fall honey if we do not get rain soon. The honey we got so far is of excellent quality, and I am well satisfied with the quantity I got of white honey so far.

I should like to ask A. I. Root what we should do with the large quantities of barley that are produced here if nobody would drink beer. No. 1 wheat at 48 cts. per bushel won't pay. Barley pays best here of any small grain, therefore we sow it. C. THEILMAN.

Theilmanton, Minn., July 27.

[Friend T., that is a good square question, and one that we have got to meet in a Christianlike and temperate way. I myself raise rye, as you know, on a small scale. Almost every season somebody asks me how I know that it is not used for making whisky. Well, as all I raise is sold for seed, I feel pretty sure that the product of my grounds is never used directly for making whisky. The people who buy of me, however, may sow it for the purpose of raising grain for a distillery; but my opinion is, that we are going too far when we undertake to circumscribe ourselves to that extent. Rye is used, at least to some extent, for bread. The crop is also largely raised to plow under; and rye straw is quite a commodity for various paper-mills. It may be that barley is used principally for making beer; but not altogether, for in California it is their great hay crop; and it is used largely for feed in the form of hulled barley. I would not make a business of raising rye or barley either, on purpose to supply a distillery; but with my present light on the subject I would raise either one of them, if it were convenient for me to do so, and sell the product to the grain-dealers for whatever they would pay. Some good Christian people of my acquaintance once complained because I bought ice of a saloon-keeper. Now, this saloon-keeper also had a farm, and raised potatoes. When I asked the question if I should refrain from buying potatoes of him because he was a saloon-keeper, they thought I ought not to buy even potatoes of him. I thought, and still think, that it was my duty to encourage him in every honest industry, whether it be putting up ice or raising potatoes. In other words, I certainly would not aid, either directly or indirectly, any thing in the way of production or sales of intoxicating liquors; but at the same time I would take great pains to encourage the very people engaged in this traffic in obtaining a livelihood by some other means. Please remember that corn and even honey can be used, and are used, for making intoxicating liquors.]

THE LANGDON NON-SWARMER A FAILURE.

As you call for reports on the Langdon non-swarming device I send mine. Bees swarmed out in six days after putting on. I then hived the bees in a new hive, and put the boxes on the swarm. I then adjusted the device to two other hives, and it smothered about all of the bees in the two. I then tried it on two more and smothered them, and then concluded to quit. It seems that, when you have a very large lot of bees in a hive with the device on, and close the slide, the bees bank up at the inch hole where the cone escape is, and conclude they are fastened in, and then get up such a heat as to melt the combs down and all die in a pile. HENRY MARDEN.

Roodhouse, Ill., July 25.

[It would be possible to remedy the trouble from smothering, but perhaps not so easy to prevent the very things we want to prevent—swarms.]

Here is one report against the Langdon non-swarming attachment. It is non-swarming, sure. It runs the brood nearly all out of both hives, and does not increase the amount of bees or honey, so far as I can see.
Worcester, N. Y. W. H. MALLORY.

I adjusted one of the Langdon devices to guard colonies, and the one shut in smothered to death. The bees just covered the device so they could not get out. Every bee died.
Rodney, Iowa. C. J. BARBER.

AN INGENIOUS RECEPTACLE FOR GATHERING FRUIT.

Friend Root:—Your mention, on p. 616, of John Chinaman's expert way of carrying loads behind and before, so as to be self-balancing, calls to mind a way of gathering and carrying fruit which I learned in Florida, which I think, if not generally known, will prove a boon to some shoulder-blistered fruit-gatherers who still use the fruit-bag slung on the side, and its weight all borne by one shoulder, which is cut and blistered by the narrow strap.

Down there, for gathering oranges they use a sack made in the shape of a shirt—a long one—strong Osnaburg is the material. In the lower hem, which reaches below the knees when put on, a cord is inserted, with eyelet holes in front, for the ends of the cord or tie-string. The fruit-picker puts on the shirt over his other clothing, and, adjusting this bottom hem about his waist, draws the strings tight and ties, thus making a bag all around him, of commodious dimensions, into which he can rapidly pass the fruit, through the opening in front.

When loaded, his burden is distributed evenly around his body, the weight being borne by both shoulders, and, to some extent, by the back and waist; his equilibrium is still maintained, and he can descend the ladder, and, generally, handle himself with far greater ease than when using the lop-sided satchel plan, which not only hurts his shoulder but throws him out of plumb, and makes his movements awkward and clumsy. When emptying out his fruit the picker simply stoops over the box or basket and allows the fruit to roll out, breaking the fall with his hands.

It is easy to see, that not only is this way of carrying fruit the least trying to the workman, but it enables him also to carry more at every load, and he can gather fruit faster, it is claimed, than by any other plan. C. P. COFFIN.
Pontotoc, Miss., Aug. 5.

[Friend C., we are very much obliged indeed for your suggestion. The only trouble just now with us, around here, is to find the fruit to gather. A very small bag would hold pretty much all we get on any one tree.]

HUMBUGS AND SWINDLES.

THE AMERICAN COFFEE-BERRY.

My Root:—What is your opinion of the American coffee-berries that are being advertised? Do you think that they will become very popular among the farming class of people? J. MCQUEEN.
Baltic, Ohio, July 24.

As the above is a little out of our line, we forwarded it to the editors of the *Rural New-Yorker*, who make the following reply:

[This "American coffee-berry" seems to be the Japanese Soy bean, which has been tested at several of our Experiment Stations. The bean, when ground and roasted, makes a fair substitute for coffee, and is used for this purpose quite a little in parts of Indiana and Illinois. The "American" part of it is the cheek of the "introducer," who calls it a new thing and wants to charge 10 times what it is worth. The Georgia Experiment Station has sent out a bulletin describing the matter.
H. W. COLLINGWOOD, *Editor Rural New-Yorker.*

Friend M., will you please tell us where you saw the American coffee-berry advertised? and, if you can, forward this to the editors accepting such advertisements. We had heard of it before, but wanted to be sure we were right.

REPORTS ENCOURAGING.

Bees are just booming. This is the best season in five years. T. DOOLEY.
Sweet Springs, W. Va., July 21.

I shall have over 3000 lbs. of honey from 45 colonies, many of them in a weak condition in the spring. B. W. PECK.
Richmond, O., July 31.

Bees are just "humpin" themselves. Some colonies have made me over 100 lbs. each, and going on the fourth set of sections.
Alexandria, Ind. E. E. EDWARDS.

We will give the correct weight of the number of pounds of honey one swarm gathered. The swarm was hived July 15, on empty combs from the extractor, and we set it on the scales. Honey from white clover—July 16, stored 14¼ lbs.; July 17, stored 12 lbs.; July 18, stored 9 lbs., all from Italian bees and queens reared in our apiary. COLE & LOWERS.
Latona, Wash., July 19.

20 TONS OF HONEY FROM 176 COLONIES.

As you asked for reports, I will give you ours up to date. We have made 20 tons of honey from 176 colonies. They were weak in spring; but by giving close attention we got them in fine condition for the first honey-flow. The honey here is of a very fine quality this season, as the bees could get it more easily from the sage than from any other flower. The apiarists of this locality are holding their crop at 5½ cents. EMERSON BROS.
Santa Ana, Cal., July 18.

THE BEST OF SUCCESS.

I am having the best of success. I am still in the Smilery. I have 27 stands, 20 of which are on Hoffman frames, so you see I am making haste toward an apiary. Your suggestion of giving new swarms frames of brood and honey is just perfection. I owe my entire success to this and the A B C. I am much elated now; but by spring I may be in Blasted Hopes, and may feel just like the fellow you pictured sitting on an inverted bee-gum. But I hope I may never look like him. J. J. TEMPLE.
Lewisville, Tex., July 20.

REPORTS DISCOURAGING.

No honey from my 19 hives this season.
Dardenne, Mo. WILLIE C. WILSON.

Bees did scarcely any thing last season, and they are the same this. Drouth was partly the cause. About half died last winter, caused by lack of stores, cold weather, and candied honey. For two or three years the honey has been can-

dying in the combs as soon as gathered—at least, a considerable part of it.

Nokesville, Va., July 21. W. T. Allen.

POOR HONEY YEAR IN NEBRASKA.

The honey crop with us so far has been a flat failure, with no indications of a fall flow. White clover, the chief source of honey, was practically all killed out last spring, and, owing to the excessively dry weather, other honey-producing plants have not made a very rapid growth. To add to the drouth, the grasshoppers are plentiful, and are doing considerable damage. But we have no cause for complaint, for we have had good honey crops the past two seasons, and will prepare for one next season.

Crete, Neb., July 24. F. M. Trout.

NOT A GOOD HONEY YEAR FOR MISSOURI.

Friend Root:—In Stray Straws, July 15, Dr. Miller says: "The 'great clover year' will be the way 1893 will be referred to in the future." I wish it were true on this side of the Big Muddy. I also see 16 encouraging reports, in Gleanings. Would not a very blue report set off those bright ones, and make them look brighter? This is the poorest season since 1887. That year I did not get a spoonful of honey from 12 colonies of bees, spring count. Last year (1892) was very poor, getting only about one pound from a hive, on an average. This year I have taken off six sections, and there are not more than 15 or 20 more that are nearly full. Now the bees are getting almost nothing. There was no nectar in the white clover. What little basswood there is here yielded no honey. The sumac was also about dry. This is what you call "blasted hopes," I suppose. I have never known any surplus honey after this time of the year, gathered here. That Crane smoker is a dandy. R. D. Beck.

Niangua, Mo., July 28.

NOTES OF TRAVEL.

ON THE WHEEL.

On page 612 of our last issue you will notice an invitation from C. W. Frank to go and see his 4500 celery-plants, etc. It was not very many days after said invitation before I presented myself, as Fairlawn is only about 17 miles east of Medina. Friend Frank is a young man only 24 years old. He lives with his father and mother. I found him putting out celery-plants in the garden, for they had just been having a tremendous rain. The garden is a rich sandy loam; and as I kicked into it with my foot I concluded it had been treated most liberally with manure for, very likely, a good many years back. Just as soon as I told him who I was, he put his plants in a shady place and marched me into the house, and introduced me to his folks. There was a mischievous twinkle in his eye as he made the announcement, "Here is Mr. A. I. 'Gleanings';" and then there was quite a laugh all round. Right in front of the door is a huge wooden pump, and it brings up just the kind of soft spring water that Summit Co. is noted for. It was in the middle of a hot day; and, didn't I just enjoy taking drink after drink of that beautiful, clear, delicious soft water! In a minute or two my eye caught glimpses of some pails of huckleberries. They were unusually large and fine; and when I found that they grew on their own land, and that the family had made some attempts at cultivation, I tell you I felt glad. They had been doing just what I had thought of—cutting out all other forms of vegetation, and letting the berries have the swamp all by themselves. The first they carried into the Akron market, only three miles from their place, brought, if I remember correctly, 18 cents per quart. I wanted to go straight to the huckleberry-swamp, and see them grow; but Mr. Frank laughingly remarked that there were lots of other things I must see first—notably, the 4500 celery-plants. They were in a rich garden-spot, such as I have described, and partly shaded by trees. A large quantity of manure was put on to the ground and worked in; then the plants were put out just 7 inches apart. They were White Plume and Self-blanching. Sure enough, they stood, some of them, nearly two feet high, and the ground was densely covered. Boards a foot wide were set up along the outside of the bed. Some of the plants were large enough for table use, but they were not sufficiently bleached as yet. In fact, they were rather tall and spindling, and hardly thick enough at the bottom to fill up the space so as to bleach fairly. After he and I had looked it over and talked it over, we both concluded he had hardly given sufficient water during the past drouth; and I am afraid the ground was hardly rich enough. To grow celery in this way the ground should be almost half manure; and my opinion is, that it ought to be worked in certainly a foot deep, and may be 18 inches would be better. Commercial fertilizers may be a help, but I am sure we want stable manure down in the ground for them to fall back on. A windmill over their barn furnishes water; but just then somebody had left the valve open, and the tank was empty. Besides, the windmill was out of order, and did not stand very square in the wind, as it ought to do. I want to digress enough to say that I have never yet seen a windmill that would stand before the wind and govern itself under all circumstances as I think a windmill can be made to do. In fact, a great part of them that we see throughout the country do only about half the work that they ought to do, and from that down to a quarter and even nothing at all. Before I came away, however, there was an abundance of water, and I saw just how they used it. To give all the water with a hose and sprinkler is, however, considerable work, and such great quantities are needed for such a method of growing celery that I am inclined to think that sub-irrigation is going to be the thing. This is, simply laying tiles on a dead level right through the bed. They should be from a foot to 18 inches below the surface. Another celery-grower, of whom I am going to speak later on, said that, if he could have his way, he would have these irrigating tiles only three feet apart. This, however, was for plant-beds for raising celery-*plants*.

After the celery, we visited his acre of cantaloupes. Some were already as large as goose-eggs, and the show was very nice indeed. A part of his first planting came up poorly; in fact, I am inclined to think that melons and squashes came up poorly almost everywhere when we had those heavy rains in May. Part of the field was very nicely cleaned out; but our young friend had to apologize a little for the weeds in the remaining part.

Then we visited a field of Hubbard squashes; and he showed me where he put in the fertilizer. Yes, there was a larger growth of vines on those special rows, but not enough so I should have noticed it had he not told me where the fertilizer was put on and where it was not. Another thing, in the city of Akron he says he can get stable manure, great big loads, for 25 cents a load; and during the months of July and August, when it accumulates, and nobody

seems to want it very much, he says he can find several places where he can have it for taking it out of the way. He is only three miles from the city. Now, with this condition of affairs, I am quite sure that the money he paid for the fertilizers would have gone ever so much further if paid out for manure and a team to haul it.

During the recent heavy rain, a great amount of his richest and most fertile soil, together with the fertilizers and stable manure, had washed down into the swamp; but this time friend F. had the advantage of most of us; for the good ground and fertility had gone right around the huckleberry-bushes instead of going to waste. This surface-washing is getting to be a serious matter, and something must be done to stop it; at the same time, if we can have some sort of crop to catch it before it goes into our creeks and rivers we shall be heading off loss in another way. This huckleberry-swamp has no outlet. The soil is so porous that the water ordinarily gets away before it rises up very high. Such swamps are scattered all over our State, and one can imagine something of the fertility they contain by the enormous growth of weeds, swamp-grass, etc. I tell you, if I had some huckleberry-bushes under cultivation, so situated that they would catch and save the fertility during a time of tremendous rains, I should feel happy. If I am correct, the huckleberries would stand being covered with water for quite a long period, and not be injured. When a boy, I used to gather the berries when wading in water nearly a foot deep. No matter how severe the drouth, there is but little danger of losing a crop of huckleberries on this account.

Toward evening my good friend Frank took his smart horse "Rush" (I think that was his name), and we went to visit my cousin, Mr. Atwood, whom I mentioned on page 485. Oh what a sight met our gaze! Mr. A. has been busily at work ever since my last visit. Twenty-five acres of that swamp land have been brought into subjection, and the beautiful rows of celery are not only as straight as you can draw a string, but so even and regular in size and color that each row—in fact, each *plant*—seems to be a perfect counterpart of its neighbor. As we passed along the road and looked up first one row and then another without getting a glimpse of even a bit of "pusley" I really felt like giving a whoop to express my satisfaction. When we came to where another man's land commenced, where he had started into celery also, the contrast was almost painful. Crooked rows, plants missing, weeds and disorder, made one realize that he was not in a fairy land after all. The boy told us that Mr. A. was not at home. He said he had gone over to a neighbor's after a jug of water. You remember my exhortations to friend A. Well, I asked the boy if he knew whether there were any nice young ladies living over where friend A. had gone. We went over, and brought him back with his jug—that is, after he told us he was not particularly engaged for the evening. He is quite a scholar as well as gardener; and after I had teased him some he commenced with a solemn air:

"Mr. Root, do you remember a certain French general who once said, when asked why he did not pay more attention to the ladies, that his affections, his heart, and his soul, were bound up in France? For France he was going to live, and for France he was going to die, therefore France was his mistress and his 'all in all'."

"But, friend A., I do not see the point. Where is *your* France?"

With a dramatic air he waved his hand over the beautiful lines of green as they stretched out in the distance in the moonlight, and said something like this:

"For the present, making a success and a thing of beauty of these vast acres of swamp-land takes all of my time and energies and affections."

"But you have succeeded; you have 'got there' already," interrupted friend Frank. Whereupon the boss of the celery-farm shook his head sadly, and then I added:

"No, perhaps you have not succeeded—at least, as well as you may succeed in time to come. But, my dear sir, it will be a long time before I am convinced that a good man will not succeed quicker, and his success be greater, in any honest, praiseworthy undertaking, with a good *woman* to help."

The plant-beds that so delighted my eyes on my former visit were now about vacated, the contents having been so beautifully spread over those wide acres.

"But, look here, friend A., how does it come that, during this severe drouth, every thing looks so bright and green, and your swamp-ground is such a beautiful jetty black? Surely you have not been irrigating this whole 25 acres, have you?"

My young friend right here suggested that he had got a new plan of irrigating, and then he pointed to the water shining in the moonlight in one of the ditches right at our feet. I started.

"Why, see here, old fellow; how does that water come way up there, within a foot of the top of the ground?"

There was a twinkle in the eye of the proprietor as he replied:

"Why, I put it there. After that dredging-machine that you heard panting and blowing off through the woods got up here and let the water out of my way, I found there was danger that I should soon want the water that I was so anxious to get rid of. So I found a place in the creek high enough up where I could let the water in on my grounds, and that is the way I have kept things growing at such a rate."

"But you told me there was a little fall from one side of the swamp to the other—enough so the water would run off in your tiles. If this is true, how do you keep it at the right height here without having it come up down there by the road so as to give your plants too *much* water?"

"Well, we did have just that obstacle to meet, and we met it very simply. We fix a piece of heavy tin on the end of a board; then we dig down so we can see the tiles, and push the tin down through a joint so as to hold the water back. The dirt can then be thrown in back around the handle sticking up; and by raising or lowering this you can control the flow of the water."

There, my friends, you have an ideal celery-swamp. Right in the same neighborhood I found a market-gardener, Mr. Chas. C. Miller, who made me open my eyes and stare at his early White Plume celery, and his beets and radishes that he was raising for the Akron market; and as he said his boys were going to get up at four o'clock in the morning, to gather, wash, and load the stuff for an early start to the city, I decided to stay all night, so as to be around in the morning to see them work. I left home in the middle of a hot day, and therefore came away in my shirt-sleeves. I would have taken my coat along, but there was a heavy wind right against me, and the coat would have been a hindrance any way I could fix it; therefore I did not take any. When I went away in the evening with friend Frank he kindly loaned me a coat. But the weather turned so cool by morning, especially in the

low land near the celery-ground, that I was very glad to borrow an *overcoat* also; so you can imagine what a nuisance I am likely to be if I should ever happen to come around *your* home on my wheel. I will tell you about that early morning visit next time.

OURSELVES AND OUR NEIGHBORS.

He that is not against us is on our part.—Mark 9:40.

Friend Root:—I had not any intention to interfere with your discussions on religion, but I can not let pass without protest your assertion that men who do not frequent church regularly are more ready to cheat than good Christians. Since we have been in the foundation business, the only two workers that we have had to discharge, on account of dishonesty, were regular church-members. Most of our workmen do not go to church at all, yet I dare you to find more honest men. Besides, if you desire it, I will name two ministers of the gospel who have tried to cheat us, and I will furnish the proof of it.

It is the usual practice amongst the preachers to calumniate skeptics. This habit has induced free-thinkers to retaliate; and now you can buy, for 25 cents, from the *Investigator*, of Boston, a small book in which about 1700 crimes of preachers are shown. I have never seen that book; but you can get it, and prosecute the publishers if you can prove that some of these crimes, committed within a few years, are invented slanders.

In answer to Mr. Kaufman, who wrote that a man must act the way he is built, you borrow the idea of Mr. W. P. Root that such views would be cheered and accepted throughout all the haunts of vice. Although I think that Mr. Kaufman was too positive in his assertion, yet I will say that the principle of his idea is accepted by all the anthropologists who have thoroughly studied the question.

As soon as the Europeans took possession of America, 400 years ago, they tried to civilize the Indians. Continued attempts were made also to civilize the savages of Australia, of Ceylon, of South Africa, etc. Why did they not succeed? Because these savages act the way they are built. Every man is endowed with different desires and aptitudes. England produced Darwin; United States, Edison; France, Pasteur. You could not make an Edison of a Darwin, nor a Pasteur of an Edison.

You imagine you feel Satan teasing you without intermission. As I have never felt him around me I do not believe in his existence; and, of course, I think that it is the way you are built which gives you this imagination. Furthermore, you were born especially a business man in the full acceptation of the word; *donnant donnant* (giving to receive), as we say in France; and not only your success in business, but your ideas on religion prove it.

You wrote, page 568, "Dear friends, we have a plain and clear Bible promise that we shall receive tenfold more than we give up, here in this present world, and eternal life beyond;" and, page 569: "The Master answers that every one who has followed him, every one who has forsaken houses or brethren, etc., shall receive a hundred-fold, and shall inherit everlasting life," etc. So, unconsciously, you consider religion mainly from a business standpoint—giving something in exchange for more.

Whip or candy? All the Christian religion is expressed in these three words; yet I think mankind is old enough not to be dealt with as with our tame animals, and that it would be better to develop conscience in our children than to use the fear of hell and the hope of heaven.

My parents never mixed their doctrine of good behavior with the hereafter, of which we know nothing. They used to say, "Remember that your duty is to act according to your conscience; that "bonne renommée vaut mieux que ceinture dorée" (a good name is worth more than a golden belt), and that you can not get a good name unless you behave well and act honestly and friendly toward all. My father had seven children. They have never given him the smallest cause to regret his method of teaching them morality independently of religion. I have used the same means with my children, with the same results.

We free-thinkers do not work in view of reward, but we act for the love of what is right. If we make something wrong we do not fear hell; but our conscience grieves us till we have tried to make amends. If we help some poor man out of a sad position, we do not do it to go to heaven, but we find our reward here in the satisfaction of having acted right. We do not care for the hereafter, of which we know nothing.

To the question of Mr. Randall, "Who made Satan?" you answered: "God made him good, but he made himself bad." I desire to complete the question: "When God made a good Satan, did he know that this good Satan would turn bad?"

"Yes, certainly, since God knows every thing!"

Then, according to your creed, God had foreseen that Adam would disobey, and that nine-tenths of mankind would be damned, notwithstanding the sacrifice of his Son; and you believe that God, who foresaw all these evils, created Satan and Adam all the same, and without remorse.

You may retort that God made us free agents. I can not accept this shift as an answer. My question is: "Before creating Satan and Adam, did God know that the nine-tenths of mankind would be damned?

If you can give an answer which proves that the God of the Christians acted right in creating men who did not ask to be born, while he did know beforehand that most of these people would suffer eternally by their own fault—if you can prove that such an act was just, you will convert millions of skeptics and free-thinkers.

I have laid down this question to scores of priests and ministers. Nearly all of them turned their back directly. A few answered that we have not the right of questioning what God did. But I do not question what God did. I question only what you Christians say that he did. Such a belief as yours is not only an insult to God, but a monstrous slander, which has diverted from religion all those who did not fear to consider it squarely; for, if your religion is true, God is worse than all the monsters which can be imagined.

I have noticed that Christians fancy that it is on account of their wickedness that free-thinkers do not believe in the tenets of Christianity, while it is just the reverse; for every honest man who will dare to consider the monstrous character attributed to God by religion will reject it, to look for something more in accordance with his ideas of kindness and justice.

I hope that, since you try to answer all those who are really seeking the truth (page 569), you will publish my letter, especially as I write in answer to your slandering us free-thinkers.

Hamilton, Ill. Chas. Dadant.

Dear friend D., it gives me a feeling of pain to think that you and I should even *seem* to be taking opposite sides, especially in public, as we stand before the world, when the truth is, I am sure, that we both love honesty, purity, temperance, and virtue; or, in other words, that we are both seeking righteousness. You certainly misunderstand me, and perhaps I misunderstand you. Yes, I have heard of that book that tells of the crimes committed by ministers. You say we calumniate the skeptics. I certainly did not mean to do so; and if it is true, and that skeptics also calumniate us, then there is a very bad state of affairs indeed. Jesus said, "Love ye your enemies, and do good to them that hate you." Now, suppose that Christian people should get out a book and publish the crimes committed by free-thinkers—would anybody buy it? Why, I should be ashamed to think that either Christian people or free-thinkers would buy such a book. I certainly would not read it. If I knew exactly what it was, I would burn it up as soon as I could get hold of it. In past ages it may have been necessary to build up a creed by pitching into other people; but surely not now in this age of the world. If I did pitch into free-thinkers, or seem to do so, I humbly beg pardon.

First, you say I have said, "Men who do not

frequent church regularly are more ready to cheat than good Christians." I did not mean to say exactly that, friend D. What I did say was this: "If I wanted a good man for an important place, and wanted somebody I could trust when I was not in sight at all, I should, other things being equal, greatly prefer a man who attends church regularly, and who takes some part in the Sunday-school, weekly prayer-meetings," etc. You see, I was giving my own experience. If your experience is so different from mine, I am sorry. In the closing words of your first paragraph are the words, "good Christians." Friend D., is it not true that the whole difference between you and me may be summed up in this? You consider Christians hypocrites. I believe them to be honest in their profession. The good Christian stands before the world and stands before men taking a sacred obligation to be honest and pure and temperate, etc. You pay me a great compliment by calling me a business Christian. I do believe that Christianity should be a *business*. A Christian man is like a bank. He stands before the world prepared to live up to his profession. A bank stands before the world agreeing to make good its promises to pay, etc. When the bank fails to pay hard cash, according to the promise, it fails, and becomes a by-word and a reproach. When the Christian lets Satan lead him astray by dishonesty and impurity or intemperance, he becomes a reproach and a disgrace to the cause. There are certainly some good men among Christians. If they are *all* hypocrites, the state of affairs would be like a nation where the money was *all* counterfeit.

I wish you would give me the names of the two young men who were discharged on account of dishonesty, and were regular members of the church; or, better still, just lend them this journal, and tell them to write me an explanation. Please excuse me, friend D., if I can not help thinking that there is some misunderstanding, or that you are a little too hard on them. I am *exceedingly* glad that the rest of your men are honest, even if they do not go to church. Yes, I do desire you to name the two ministers of the gospel, but do not do it in public. Give me their names privately, or, as I said before, show them this journal, to remind them of what a serious and grave thing it is to dishonor, by their business methods, the sacred cause to which they have given their lives.* Ministers are no doubt sometimes slandered; but I myself do not believe they are very often slandered unless they are at least somewhat to blame. If one should make a business of hunting up all the ministers of the United States who have yielded to temptation, and denied their Savior, as even Peter did, no doubt it would make a good-sized book; but remember, dear friend, our country is a large one. There are three or four ministers in every little town, besides many more scattered throughout all the rural districts. They are sprinkled like salt throughout all this vast wide country. You know Christians have been called the salt of the earth; and my experience has made me think they are really the salt of the earth, notwithstanding these exceptional cases you have mentioned. Ministers are human. A good many of them are poorly paid, and some of them, I am sorry to say, ought never to have been in the ministry. Unprincipled men of education and ability frequently take up the ministry for selfish ends. It would be strange if some did not. In this case they are not Christians at all, but simply *hypocrites*. Pretty soon they are found out, and they give up their profession, or they are put out of it, and go back to where they belong. This book you mention would, no doubt, contain the names of all of these. Why, the temptation is tremendous to manage to get into the pulpit in order to further some scheme to defraud. I knew of a "patent-right man" who called himself a minister, and actually preached a pretty fair sermon in one of our churches. He stayed here several weeks, and accordingly won the confidence of the people; and when he had got quite a lot of money he "lit out" for a new field. Such cases will, of course, go into that book. Then there are now and then instances of where a good man—a man who has, perhaps, preached faithfully for, may be, several years. Once in a great while we find such a man who, in an unguarded moment, yields to temptation. Down he goes, shaking community, filling the papers with scandal, dishonoring the cause of Christianity, and spoiling the faith of, perhaps, good people as well as bad. But when we consider the number of ministers of the gospel there are in the United States, I think the 1700 crimes you say are mentioned in that book do not make a big percentage, after all. But how does it render the teachings of Christ obnoxious to you, even if these men *were* false? You should consider the *men* and not the *gospel*. They were not bad *because* the gospel taught them to be so, but *in spite* of it.

Friend D., please remember that I have for years visited, talked with, and got acquainted with all the inmates of our county jail. More than that, I have visited prisons in other places in my travels. I have made this matter of crime in our land a deep study. When I spoke about a man *acting* the way he is "built," I had the inmates of our jails in mind, and I was thinking of the many times new criminals try to excuse themselves by saying they could not help it. An intemperate man tells me that his father drank before him, therefore he inherited an appetite that he can not resist. He is *built* that way, therefore he is not to blame; and criminals excuse themselves for all sorts of crimes in that same way. Now, the Christian religion teaches us, as you are well aware, that, even though a man *has* inherited appetites and passions, there *is* help for him. He can be *reconstructed*, *emancipated*, "built over" again, and may God be *praised* that this *is* indeed true. Why, old friend, you need not be surprised to see me full of energy and enthusiasm and faith in

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*Most of our readers are already aware that we have for years sent goods right along to ministers without pay, and without even consulting Dun or Bradstreet. All we want to know is, that he is a minister of the gospel, and preaching regularly to a parish of people. Sometimes the clerks remonstrate; but I tell them to keep on until we find a minister who does not pay his debts. This has been our custom for years, and we have not lost any thing yet. A few days ago we had an order for celery-plants. Our customer said that, if we had a certain kind he wanted, we might send them along also *C. O. D.* "No, no," said I; "do not send them C. O. D. Don't you see he is a minister?" But the clerk objected, saying, "But he says we are to send them C. O. D., and he will be quite willing to take them in that way." But I objected again. "It will cost him some money extra to have them sent C. O. D., and we certainly do not wish to put a minister of the gospel to needless expense. He will surely pay for whatever he orders."

During the years that have passed since this has been our custom I have been a *few* times obliged to write to them that, if they failed to make good their promises, they would be the first to break the fair record that their calling has so far given us; and as ministers, like other people, are often behindhand, and have sickness, we have sometimes been obliged to wait on them. Now, I can not tell you how this record would compare with that of the free-thinkers; but I should be very glad indeed to know that this latter class are *also* prompt and upright in all business deals.

being built over again, for *I* have been so built over, and emancipated from what would have been despair and ruin. Others have been emancipated and saved under my own eye—I speak it reverently—through the results of my own labors and teachings.

Now, I do not mean by the above that this being "built over," or "born again," as the Bible teaches, would transform an Edison into a Darwin or *vice versa*. These *natural* gifts are in a different line. The emancipation from sin is a spiritual work. When any one feels himself hopeless against these evil impulses then I can say to him confidently that there is help, hope, and a refuge. The gospel is designed to transform an enemy of society into a friend of society; and that transformation renders all other human progress more easy and more probable. This seems to be recognized by even the railroad corporations—the most unsentimental and conservative class we can find; for a recent number of the *Scientific American* says that the Railroad branch of the Young Men's Christian Association receives upward of $100,000 a year from the railroads in order that their hands may be drawn from the saloons and gambling-dens, into such associations as make the best men for railroad purposes. The railroad companies are just now turning off men by the thousands; but the Cleveland paper said last night that these same companies were making every effort to retain the "best" men; and I feel very sure that, aside from the mechanical skill of these men, a strong preference is invariably shown for those whose lives are most in accord with Christian morality—sobriety, and a general air of respectability. But I am aware that you will put as high an estimate on such virtues as anybody, and claim that such principles can be maintained *outside* of religious belief. Granting that a few exceptions seem to prove your assertion, when we come to take humanity as it is all over the nation the best reply I can make is to quote a few words from the Farewell Address of George Washington. If his knowledge of men was not wide enough to make us thoughtful in what he says, the case seems almost helpless. Please read this, written just at the close of the most bloody revolution in history—one that rent your own native land from center to circumference:

"Of all the dispositions and habits which lead to political prosperity, religion and morality are indispensable supports. In vain would that man claim the tribute of patriotism, who should labor to subvert these great pillars of human happiness, these firmest props of the duties of men and citizens. The mere politician, equally with the pious man, ought to respect and cherish them. A volume could not trace all their connections with private and public felicity. Let it simply be asked, Where is the security for property, for reputation, for life, if the sense of religious obligation desert the oaths which are the instruments of investigation in the courts of justice? And let us with caution indulge the supposition that morality can be maintained without religion. Whatever may be conceded to the influence of refined education on minds of peculiar structure, reason and experience both forbid us to expect that national morality can prevail in exclusion of religious principle."

I am glad to hear you say that friend Kaufman was too positive. I am really afraid your anthropologists have not investigated Christianity. They have simply put man on the dissecting-board, and treated him as if he were a mere animal. The matter of *soul* has been entirely overlooked by them.

In the issue before this I told you what John Williams did in the islands of the South Sea, where they swarmed with cannibals; and we have right here among us educated and talented people from among the Indians, the colored people, the Chinese; and, in fact, since the Endeavor society has made such wonderful strides, they are educating and bringing to the front scholars from every nation and every tribe and every clime. Mr. Calvert, with whom you are acquainted, attended the great Endeavor meeting, and could tell you wonderful stories of success attending the attempts to civilize the savages of the world. I grant you that it is a pretty big task to take a savage from his native wilds, and wean him from heathenism in a few short years. In my trip through the West I visited the Indian schools, and I inquired carefully into the discouraging features in the attempt to educate them. I know a great many people give it up, and say they are not worth the time and pains and money that have been expended on them; and I feel ashamed of some professing Christians who talk and act in just that way. You are quite right in saying that Darwin could not do Edison's work, and Edison could not do Darwin's. God in his wisdom has given us particular fields to labor in. We have all been called to some appointed work, and no doubt you are right in thinking that God has called upon me to preach and teach, in season and out of season, that there *is* such a being in existence as Satan, and that he *does* go about as a roaring lion, seeking whom he may devour.

Now, my good friend, please excuse me for taking up your assertion, "I have never felt him around me." Surely *you*, like the rest of us, have evil impulses. Did you never get vexed when, in thinking about it afterward, you felt bad about it? Did you never feel the "swear words" coming up when it seemed as if you would have to shut your teeth to keep the words back? I take it for granted that you do not swear, for a little further on you acknowledge, or, at least, I take it so, the existence of God. Any man who believes in God as the ruler and manager of the universe would certainly be untrue to himself and to his God if he spoke lightly or disrespectfully of this great ruler, or if he allowed himself to take his holy name on his lips when he was angry or provoked. Do you never feel a tremendous inclination or desire to do things which you ought not to do? Have you had no experience of the wonderful attractions there are in the racing or gambling mania? Have selfish impulses never prompted *you* to be unfair toward your fellow-men—that is, if you listened to such impulses? In short, has it never cost you a struggle to put down selfish and evil feelings, and to encourage generous and good ones?

Pardon me for the illustration I am going to use now. It may not apply to you at all. I am sure I do not know you well enough in your home relations and in your own neighborhood to have any thing to say about it. The illustration is this: Once, when I was a boy, in visiting some relatives I found a little boat tied up by the side of a river which ran near by. Without saying a word to anybody I pushed off into the stream. Without thinking much about it I thought I would go *downstream* first. There was not a bit of trouble, and no exertion was needed on my part to have a most delightful ride. In fact, I said to myself several times, "If boat-riding on a river is so delightful as this, I certainly am not going to live much longer without having more of it." By and by, however, I thought it would be prudent to see how much work it was to get back. I shall never forget the tussle I had to get back to the landing-place, nor the huge resolve I made as,

dripping with sweat, and worn out with the unusual exertion, I tremblingly tied my boat where I found it. The obstacles and resistances came only when I tried to row upstream instead of floating down with the current. Well, there was a time in my life when I was ready to say, as you do, that I had no reason for believing in Satan at all. I had seen no evidence of such a being, for I was going rapidly downstream, unmindful of the cautions and warnings of good Christian friends around me. After that eventful time, however, when I turned about to retrace my steps, and with a resolve to fight against the current of sin and evil, then I met resistance, and I meet it every day.

Only last week word was brought to me that a man was most cruelly beating and misusing a horse because it would not work. The horse was blind in one eye, and had a defect in one of its feet that would make it hopelessly lame for ever. Nearly everybody around there said it was not their affair, and they did not like to meddle with the man in question. It was a good deal easier to go *downstream* with the current. Now, my obligation as a Christian demanded that I should leave my business, go several miles and look the thing up, and take the part of the poor dumb beast. I too dreaded to stir up ill feeling and get myself into a quarrel; but the prospect is, I shall have considerable "rowing upstream" before I get through with it. The Humane Society, however, and other good people, will very likely give me a lift; but I *might* have gone on sailing downstream with the greater part of the rest of the world, and not got any glimpse of Satan at all, much less having a square hand-to-hand fight with him.

You speak a little further along about conscience. Good! I was very glad to see that. You believe in a conscience, and you believe in God who implanted this conscience within us as a monitor and a guide. Why, you and I are not far away from each other, even if we do call things by different names.

Now just a word about that expression of yours, "whip and candy." This thing is thrown up to us a good many times, and yet I am sure we think nearly alike about it. Now, would you not teach young people that there is a reward for doing right? Would you not say that *honesty* is the *best* policy? and yet this homely old proverb is a selfish one. People the world over (let alone children) are continually getting the idea into their heads that they can get along *faster*, and accomplish *more*, by telling *lies* and *stealing*, than they can by telling the truth and *working* for what they want. Every little while some young man (or old one) gets an idea that the ordinary methods of acquiring property are too slow or humdrum, or they want something with more excitement about it. Our teachers and our preachers—our good men and our good women—almost continually urge and exhort such to the idea that there is more *happiness* and more *money* in sticking to the steady duties of life, and in making their money in the orthodox way. A great part of our people are every little while getting crazed by the gambling mania. They think they can get rich faster by buying lottery tickets than by working on the farm. What can we do but to hold up both whip and candy, as you term it? Every thing we do is for some anticipated good, or from a fear of evil if we do not do it. We are continually grasping for a gain of some kind, or fleeing from evil of some kind. There can be no movement of the will aside from these two motives—one positive and one negative. You doubtless remember N. C. Mitchell, a talented lawyer and a man of great ability—in fact, once the editor of a prominent bee-journal. This man put out circulars, established companies, and did a great amount of work, and took a great deal of pains in order that he might get money for which he never rendered any equivalent. Father Langstroth, in commenting in regard to Mitchell's career, said that, if the man had expended the same amount of energy and zeal in some honest undertaking, he might have been well off. He worked hard, and yet probably received nothing, and ruined his reputation and good name besides. Father Langstroth pointed out the fact that it did not pay, and that it really paid better to be honest than dishonest. Why, friend D., if you could convince the criminal class of this, there would no longer be any crime. Now, this other line of teaching is good and right also. We should be honest and pure because it is our *duty* to be so, whether it pays or not. Sometimes it costs us a big lot—yes, a big lot of *money*—to be strictly honest; but we should be strictly honest, all the same; and it is in this line that the scripture text comes in. When one tells the truth, even though it costs thousands of dollars to do so, he shall, in the course of time, get his thousands of dollars back a hundredfold; perhaps not in money, for money does not necessarily make people happy, but often quite the contrary; but the Bible promise is, as I understand it, that one who loses, for the sake of duty or honesty, will in the end be a hundred *times* better off, in the *best sense* of the word, than if he had sacrificed truth and honor for the sake of gain. Now, you and I both agree exactly in this, do we not, friend D.?

You say you do not fear hell as a consequence of doing wrong. I believe that the latest teachings of theologians is to the effect that heaven may commence here on earth—in fact, *does* commence here; and in the same line I believe that *hell* very often commences here on earth, if, in fact, it does not always do so. Taking it in this light, you and I pretty nearly agree again. If we steal we have an uncomfortable conscience, and that is punishment. Furthermore, if we are *successful* in our stealing it opens the way for more work of the same kind; for a thief never stops till he gets caught; therefore his troubles multiply upon him, and he commences very soon to reap that which he has sown. You speak of the satisfaction of having acted right. Why, that is a part of the reward that a Christian is promised; and, in fact, that satisfaction and peace of mind is what *we* call *God's blessing*. You say you do not care for the hereafter. Well, in one sense I am like you in this. I seldom think of it. I am *sure* it will take care of itself. God knows, if I do not; and I have such a loving trust in him that I do not feel uneasy or troubled about it at all.

Now in regard to your concluding point—God's foreknowledge, and the matter of sin in the world. You reject most vehemently the idea that God has foreknowledge, if I understand you. Very well. Suppose you say he has not. Perhaps that is according to your belief, and perhaps not. If he has not foreknowledge, then he is, to a considerable extent, human, as we are. He does not know how things will turn out, and this universe of his creation may be a failure or a great blunder. The anarchists and some of that class, I believe, insist that it is a blunder, and therefore blow themselves up with bombshells in order to express their disgust for God's work. If God has not foreknowledge, it relieves him of responsibility, and you might say he is not to blame for the sin and crime that exist. Now, this doctrine may be agreeable to you; but I

confess it would give me a rather uneasy feeling. It would destroy my faith in God, for I can not but think that he knows what he is doing; and although his plans may be beyond the conception of our human minds, yet I prefer to believe that he is infinite, and knows the future as well as the past. As I suggested in our last issue, this is deep water for all of us. If I understand you, you do not accept the doctrine that we are free agents. That relieves *us* of responsibility, and it would relieve the criminals in our jails of responsibility. I confess I should not have very much faith and energy in telling some poor feeble brother, steeped in sin and crime, that he probably could *not* do any better if he tried to. "Whatsoever a man soweth, that shall he also reap," seems to be written not only in the Scriptures but all over the face of nature. No, friend D., I am not able to prove or to show you *exactly* how it is that God could consistently create human beings knowing beforehand that they would go to ruin. Now, mind you, when I say that *I* can not understand it, I by no means mean to say that it can *not* be explained. I think I can get a *glimpse* of the matter, as I told you in our last issue. This thing we know: The choice is before us to do well or to do wickedly; and every man is responsible for his acts unless he is crazy. If he is crazy, then his responsibility ceases. But I prefer *not* to be crazy, even though it involves responsibility. You say you have laid this question to scores of priests and ministers. I can readily imagine how they might turn their backs. If they judged by your talk and your manner that you simply wished to find fault, they might have decided that that course was best; and the few who told you that we have not the right of questioning what God does, perhaps gave in substance something like what I have said. You reject the orthodox God of the Christian. Now, without any desire to provoke controversy, I should be very glad if you would tell us just what you do think or believe in regard to foreordination. If you say as I do, that it is something you can not fully understand or explain, any more than the rest of us, then we stand side by side; and is not that the sum and substance of it all, anyhow? Christian people regard God as a father who loves his people, and is doing every thing he can to lead them to the highest and best that this universe affords. "Shall not the Judge of all the earth do right?"

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

MULCHING TOMATOES WITH PEAVINES.

In visiting my neighbor Green I noticed he had a plot of tomatoes looking unusually fresh and vigorous during this severe drouth; and the ground between the plants was entirely covered with peavines. After harvesting his early peas, the vines were pulled up and carried a short distance to the tomato ground. Said I:

"Friend Green, where in the world did you get that idea?"

"Why, to tell the truth I did not get it anywhere. I sort o' worked into it. I have been protecting them from the dirt, and at the same time mulching the ground in this way for two or three years past."

"And is this the way you raised those extra nice clean tomatoes that you sold me so cheap for canning two years ago?"

He assented. Now, preparing stakes, driving them in the ground, and tying up the plants, is a great deal of work, as I know by experience. Another thing, it is a sort of disagreeable piece of work that is liable to be neglected, gathering up the stakes and storing them away for another season; whereas the pea and tomato vines may be all plowed under right where they are, after frost has wound up the crop.

HIGH-PRESSURE GARDENING DURING A DROUTH.

We are at present having one of the most severe drouths I believe I have ever had any thing to do with since I have been in the gardening business. Besides the dry weather, we have had drying winds that seemed to lick up every bit of moisture, and almost make light of our efforts at watering. We have not yet sent out a strawberry-plant. We gather from letters and from the papers that the drouth is so general that it would be hardly wise for us to send out the plants, even if we succeeded in getting them in good order. Of course, all kinds of garden stuff are high; so are fruits and berries. Besides the good prices, this gives us an opportunity to test fairly a good many plans of irrigation. It is true, we can make the strawberry-plants boom by giving them plenty of water; but the amount of water needed is so great during such a time that it wants a millrace in place of a windmill. Our windmill would do pretty fairly, perhaps, for a quarter of an acre; but hardly that, however, when we have so many still days that one hardly knows which way the wind blows. We have soaked up our strawberry-beds where we are raising plants, a good many times; but the water must be put on again and again until it has a chance to get away down. I heard of a man who had been trying to make his lawn grow by sprinkling. The sprinkling did not do much good, however. Finally, one night he forgot to turn off the hose, and left the water running on a small spot all night. This had the effect of soaking up the ground a foot deep or more, and it made the lawn so mushy that, when he attempted to walk out near the end of the hose, his foot went down as if he were going into mire. After this the grass started and grew to his heart's content on this little spot; and that is just about the way we must do watering to make it avail. Of course, our 1600-barrel tank is pretty nearly full of water; but as we do not know how long this state of affairs will continue, we do not dare to draw it out much faster than the wind pumps it in.

There is one kind of irrigation that greatly pleases me. I knew of a friend of mine who was drawing water for his plum-trees, and so I decided to take my wheel and pay him a visit. I found something like 100 young trees bending down with fruit. He had mulched them around the roots with coarse manure, swamp grass, straw, spoiled hay, or any thing he could get hold of. Then he drew the water on a wagon, in barrels, and kept this straw mulch wet. Some of our own plum-trees were beginning to look sickly, and the plums were shriveling up and dropping off. I at once had a little dam made around the trees, so as to have a circle about six feet away from the trunk; and this dam was filled with water by means of a hose from our windmill tank. Then the water was filled with coarse strawy manure. This kept it from evaporating, and kept the ground moist. Well, you just ought to see those plum-trees pick up, start out new growth, and see the plums swell out and look plump and green. It is a decided success; and while plums are worth from four to five dollars a bushel, there is no sort of question but that it will pay—yes, even if you have to draw the water in barrels. Where the water is not too

far away, I think it will pay on peaches also, and possibly on apples. It will certainly pay to utilize all the slops and dishwater from the house, in time of drouth. Mulch the ground around the roots, and then pour on your slops. You see, after the fruit is nearly grown it takes only a little water to finish it up. Where blackberries are not attacked with the blight, it would surely pay to furnish water to finish up the ripening.

The only kind of plants we have now in our plant-gardens is celery—that is, aside from strawberry-plants; and to keep the celery doing well we have to keep soaking the beds with water almost every day. Our celery out in the fields is coming to a standstill, unless it be some on the lowest part of the creek bottom that is always wet.

Our two plants of the Timbrell strawberry have now increased to something like 30 or 40 strong plants. Half a dozen Greenville have increased to almost a hundred. This has been done, however, by an unstinted application of fine stable manure and plenty of water.

POTATOES DURING A DRY TIME.

The Early Ohios are just about dried up, and the tops are dead. As it is pretty nearly time for them to ripen, it is not altogether due to the drouth. The potatoes, however, will be small, and few in number. The Early Puritan held out better; but in a few days its stalks will also be dead and dried up. The Freeman potato held out quite a little better still; but the only real green tops on our upland are Lee's Favorite. These are looking passably green and luxuriant; but they are also an early potato. Now, down in the creek bottom we put out quite late some Rural New-Yorkers, and these are just a pleasure to look upon. The vines are dark green, rank and luxuriant, and they do not seem to be affected by the drouth at all. They are just now beginning to cover the ground pretty thoroughly. Last year, you may remember, the Rural New-Yorker gave us the only real fair good-sized potatoes we had; and it looks as if it might be something so this year. We should remember it is a late potato. It was planted last of all, and is on ground that is mostly low and wet, with a gravelly subsoil. Some parts of the patch, however, run upon tolerably high ground, and the potatoes look rank and strong, even here. I am beginning to think a good deal of the Rural New-Yorker. Somebody asked to-day the price on Early Ohio and Freeman potatoes. Now, this dry weather seems to be so widespread that potatoes are going to be pretty well up. In fact, they have advanced in the Cleveland market from $2.25 up to $3.00 a barrel already within a few days. I told our friend that I would not dare to offer seed potatoes at present for less than $1.50 for the Early Ohio, and $2.00 for the Freeman; and may be the price on the Freeman will have to be put up higher yet.

AMERICAN PEARL ONIONS.

Ours were all sold in the Cleveland market at about $2.00 per bushel; and Mrs. Root urged me to plant *all* our ground to onions, and not try to raise so *many* things. If I knew that these white onions would bring $2.00 a bushel, no matter how many I raised, I do not know but I would think seriously of doing so. They were ripe and dry, and ready to ship, just a little after we picked our last strawberries.

POTATO-ONIONS.

The only kinds of potato onions we tested this season were the new white ones. They are sometimes called the White Multipliers. One thing that pleases me exceedingly about this White Multiplier is, that it never sends up seed-stalks. You have not got to go through the patch and watch for them, and snap them off; neither will you have in your crop any tough hard onions caused by letting the seed-stalk grow a little before it was snapped off. The only drawback with this onion is, that it is not very productive—at least, I have not made it so. I first bought a pint of these white potato onions. They were not very small, any of them, so I succeeded in raising only about two quarts from the pint. I planted every one of the two quarts last September, and this spring all I have is a heaping half-bushel. How is that for yield? It is a little queer how multipliers behave. If you plant a little onion it grows the whole season and makes a big one. If you plant a big onion, this, too, grows a whole season, but it splits up into a lot of little ones—no going to seed at all. If I had to deal with them, however, I can not help thinking that some of them, *sooner or later, would* go to seed. There is another thing in favor of these potato onions: The work is nearly all done in the fall of the year, when you have plenty of time, and when the ground is nice to prepare. Fix your ground rich and fine in September; plant your onions, little and big, and they will almost take care of themselves until they are ready for harvesting. This year they were ripe almost as soon as the American Pearl; but perhaps the dry weather hastened their ripening, and very likely it made the onions smaller than usual, and thereby decreased the amount of crop. These White Multipliers, I understand, are now offered for sale so that they can be retailed at about a dollar a peck, or $3.50 per bushel. They are about the handsomest onion in the world, but they are not quite as large, at least this season, as we should like to have them. But there are no thick necks at all. The tops all dry up and drop off by themselves. There is no topping to be done, if I understand them.

That low creek-bottom land is about the only place where we are going to have any kind of crop this season. We have already more cucumbers than our town can take care of. The seed was hastily drilled in, and has had very little attention since.

Just a word more about onions. About a year ago we sowed some White Victoria and Prizetaker seed on some very poor ground, hoping that they would make sets. They got to growing, however, during the fall rains; and when winter came they were rank green onions, looking nothing like making sets. We sold some of them for plants, in March and April, as I have told you; but as they were in an out-of-the-way place they never got hoed nor cultivated once; in fact, there was never any thing done to them after sowing the seed. Oh, yes! we did break off the tops once or twice, that were trying to run up to seed. Well, about the middle of July one of the men mowed off the weeds and clover so we could find where the onions were, and we harvested several bushels of very nice White Victorias and Prizetakers. Of course, they were small in size, because of being so close together, and for lack of cultivation; but the above is certainly a very cheap way of getting a small crop of onions providing it will work every time as it did then. The ground was so very poor that weeds did not grow of any account until April showers brought them along. Just now we are improving the dry whether in overhauling our windmills, repairing our pumps, and fixing larger reservoirs to save up and hold, till a time of need, the great floods of water that will soon come and run away if we do not hold on to them. Water, water, water, is the one thing to make gardens boom during a time like this.

POTATOES—BEING IN HASTE TO DIG THEM.

Unless I wanted the land very much for some other crop I would not dig potatoes until the vines were entirely dead and dry. One season I had a patch of Early Ohios; and during a severe drouth they were so near dead that I gave them up. In fact, I began digging; but the yield was so small that I stopped in disgust. Soon after, abundant rains came, and the vines started a second growth. Now, even though these were early potatoes this second growth kept on until frost; and, to my astonishment, I had an excellent yield of nice, smooth, good-sized potatoes. Friend Terry, in his new book, relates two similar experiences. If blight does not set in, I think it will pay to irrigate potatoes, even here in Ohio, providing arrangements are made so as to have water that is available.

STIRRING THE SURFACE, VS. IRRIGATION.

A good deal has been said on this matter, and no doubt there is much in it. For instance, I had five plum-trees that blossomed full; and, under the influence of spraying, all five started out loaded with fruit. Four of them were on ground bearing a crop of rye, and, of course, they did not get any surface cultivation. The fifth, only a rod or two away from the other four, was in the corner of a patch of corn, therefore the surface was cultivated and hoed, and the ground was kept soft and tolerably loose. This last one held its fruit fairly, while the others dropped the most of theirs. In fact, two of them had lost all their fruit before my attention was called to it. Then we dug up the ground loose, and applied water to all of them, as I have told you elsewhere. Keeping the ground loose and mellow certainly answers to a great extent in place of water; but with a heavy crop of fruit, even this surface stirring of the soil, no matter how well it is done, during a very severe drouth, would probably be insufficient to mature all the fruit. Of course, if the tree contains more fruit than it ought to bear, thinning out by hand should accompany the stirring of the soil, and perhaps also the watering. I am fully satisfied, however, that many crops of fruit that are lost, even after the fruit is almost matured, might be saved by judicious care just before ripening. Where fruit is scarce and high, as it is now, a little labor will afford a tremendous reward. We ourselves have lost a good deal by waiting for rain that we felt sure was just going to come. The barometer went down, and the Weather Bureau gave notice of local showers; but the showers were so small that they amounted to only a sprinkle. It would have paid us better to put on the water without waiting; for when the ground gets so very dry, there is not much danger of the possibility of getting on too *much* water. When the ground is only a little dry, I have known a heavy application, just before a series of soaking rains, to give the crop too much wet for its good. But this can not very well happen when the ground is as dry as it is now. One thing more: Please remember that, even if a crop does not pay the entire cost, it is better to apply water when the fruit is almost matured than it is to neglect it, and have it an entire loss. In other words, it is better to add a little more expense, and get half a crop, than it is to go through all the motions of preparing the ground, sowing the seed, and cultivating, and then get nothing at all. It is better to have half or three-fourths pay expenses than to have nothing at all toward paying those expenses; and a good many times, where there is a general scarcity, the crop can be sold at a price so much greater that it will cover *all* expenses and give a profit. Have you carefully figured this all out? When I first began riding the wheel, Ernest told me I fell a good many times when I did not need to. I lost faith in myself and in the wheel, and tumbled off. Said he, "Just keep your seat, and keep trying to keep up, and pretty soon you will be surprised to find that there is almost no need of falling off at all." It is just so in raising crops. While there is life in the crop, there is hope; and a great many times you may be surprised to find yourself coming out ahead, when you are sorely tempted to give it all up and let it go.

TRADE NOTES.

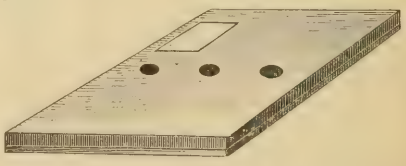
BEE-ESCAPES AN ASSURED SUCCESS.

If there is any one implement, brought out in the last two or three years, that is proving to be a great boon to the bee-keeper, it is the bee-escape. Reports show that there is little need now of smoking or brushing the bees out of section-crates. A dozen or so escapes placed under well-filled supers toward night will show as many supers the next morning with scarcely a bee in them. These supers can be taken off, and empty supers be put in their place, and no time is lost to the bees. The old way of removing sections was to smoke the bees down through the sections, following up the operation with brushing and shaking. Bees that have been smoked and shaken up in this way will not get into good working trim again for some little time. Perhaps the bee-escape that has given the best satisfaction is the Porter. Our neighbor Burt is very much pleased with its workings. We do not remember to have ever read of more than one unfavorable report; and even that bee-keeper later on acknowledged his mistake and gave a big testimonial as to the success of what he had once condemned.

It seems that, over in England, they are experimenting with bee-escapes, or what our English cousins call "super-clearers." We find the following in a late issue of the *British Bee Journal:*

WEBSTER'S CHEAP SUPER-CLEARER.

The clearer illustrated below is a very simple arrangement. A three-quarter-inch board has three circular holes, about one inch in diameter on the upper, but "countersunk" on the under side; and although the whole of the enlarged under surface of the hole is covered with woven wire, two channels cut in opposite directions and deep enough to allow passage for a single bee at a time effect a clearance. Concerning the appliance the maker says:



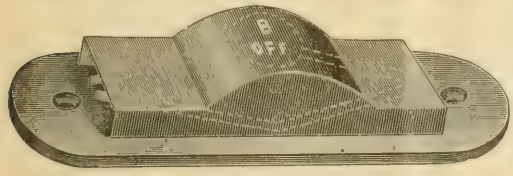
NO. 1.

"The price is very low, and you get a 'clearer' which I find, after two seasons' trial, acts just as effectively as the original 'Webster's super-clearer,' or any other, up to a certain limit of time; but it must not be left on the hive more than twelve hours, as the bees commence to find their way back after that time; perhaps a dozen will get back during the next six or seven hours."

MEADOWS' "B-OFF" SUPER-CLEARER.

This is neither more nor less than an adaptation of the American "Porter bee-escape," the difference consisting of providing two exits for the bees against one in the latter. The illustration shows only the escape proper; but it should be added that,

in order to complete the appliance, the "escape" must be affixed to a platform similar to that used with the "Porter." Mr. Meadows, however, pro-



NO. 2.

vides bee-space on both sides of the platform, so that supers may be cleared of bees either on the hive or after removal from it, by reversing the platform as required.

A GLASS HONEY-PAIL.

Many housekeepers who are also honey-users, will consider that Mr. T. B. Blow, of Welwyn, has filled a want by introducing this article as a new "bee-

NO. 3.

appliance." The cut shows what it is like, and we may add that the pail is of clear glass; the bands—also of glass—above and below, giving it strength and durability. It holds about eight pounds of honey, and has a strong screw-cap of plated iron, with handle (as shown). It is not intended to be used once and then cast aside, as with ordinary glass jars, but as a "family jar," to be refilled as required.

Model 2 is quite similar in principle to the Porter, and we judge it may be a slight improvement. We commend it to the attention of the Porters.

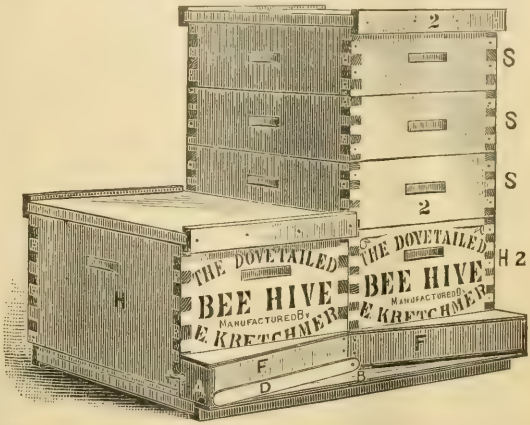
Since publishing the article from Mr. H. P. Langdon, on his non-swarmer, the following has come to hand from E. Kretchmer. The device, although the same in principle, so far as we are able to judge, is a decided improvement over that sent out by Mr. Langdon. The bees are directed toward the entrance more naturally, and the attachment to the hive does not require the boring of holes through the hive itself. It is quite impracticable to attach the Langdon device to chaff hives. That of Mr. Kretchmer can be fastened to any kind without boring holes. If the Langdon principle can be made to work, the Kretchmer improved device would have the preference.

BEE-CONTROLLERS AND NON-SWARMING ATTACHMENTS; SOME FURTHER EXPERIENCE AND OBSERVATIONS.

For some years I have been experimenting with a device for controlling the movements of the bees at the entrance of the hives, but lately more as a non-swarming attachment. When, later, I learned that Mr. Langdon had a patent on a device similar in principle, although differing in mechanical construction, I arranged with Mr. Langdon for its use under the patent.

We have to-day some 60 colonies, arranged mostly with our bee-controllers, and also quite a number with the Langdon non-swarmers; and in order that the reader may get a fuller idea of the workings of these devices I must refer back to the end of the winter.

Our bees came out of the bee-cellar in good condition—not a single colony was lost in winter, nor by spring dwindling. Now, one of the essentials to the successful working of either of these devices is, to set the colonies in pairs when first set on their summer stands; this we did with perhaps half of our bees, in order to continue the experiments of the year before. During apple-blooming we had splendid warm weather, and bees gathered honey to a considerable extent. Impatient to see the workings of the bee-controller, we placed several on some of our strongest colonies; gave them supers with comb built the previous year, and for the first time in thirty years of bee culture in Iowa we secured some comb honey from apple-bloom. Elated with our success we began moving some of



our other colonies into pairs; but we presume we were too hasty. These last-moved bees did not retain all their flying bees. No doubt many of the returning bees, finding their hive away from its original location, became confused and entered some other hive; and may not this be one cause of failure on the part of those who try the device too late in the season?

In the construction of the bee-controller we have placed the escape-cones in front, on top, on the end, and used them without cones; but we now prefer them in the end, with additional ventilators on top, as well as small return-holes, for the following reasons: Friend Langdon sent me a non-swarmer. On the morning of a warm day we placed it on two strong colonies. At noon we noticed several colonies hanging in front of their hive, the Langdon non-swarmer being completely covered. Next morning I found the closed colony dead—smothered—perhaps no fault of the device, but my carelessness in not shading the hive. It seems the bees clustered over the cone before all the bees had left, confining and smothering the remainder. By placing the escape-cone in the end of the controller, and partly concealing it within it, as it were, the returning bees do not seem to find it, but alight at the place of the usual entrance, run along the diagonal front, and are in the other hive before they seem to be aware that they are shut out from their own hive.

That but little or no honey is carried to the closed hive can quickly be seen without opening the hive. Usually on the second day the remaining bees begin to drag out the drones, and the drone brood soon follows. In a similar manner, then, when the honey-flow is suddenly cut short in the fields, if the weather is hot and dry, the worker brood soon follows. To prevent the destruction of the worker brood, we make a small hole in the *top* of the controller, away from the usual entrance-place, where scarcely any of the older bees find it; or, if they do, the downward entrance, leading to darkness, does not seem to induce them to use it; but a part of the *young* bees, that leave the hive for the first time,

leave the hive by way of this hole. They carefully note the place of their first exit, and return the same way. If these bees are permitted to re-enter their hive in the manner indicated, the worker brood is not destroyed; but if no after honey-flow is in immediate prospect, and this brood is of no apparent benefit to the bee-keeper, closing this hole with a little tin slide will soon end the open brood.

While the devices named are a great aid to the harvesting and finishing of comb honey, by preventing swarming, perhaps just when the combs are nearly ready to be capped, there are in this no rules without some exceptions. Usually when the controllers are adjusted no attention need be given them for a week; but if both colonies are quite strong they may have made preparations for swarming before the controller was adjusted; and while it prevents swarming from the hive from which the bees are excluded, as it were, it may heighten the swarming fever in the other colony; and a swarm may issue from that colony before the end of the expiration of the usual week's work. This may take place but once in 50 colonies (we had but one in 60); yet even then it may be avoided.

Depopulating one colony for three days seems to effectually remove their desire to swarm; therefore this colony, having been placed in a non-swarming condition for about a week, at the end of three days we change supers and bees over to the other hive, and now have this colony under control for a week, and work goes on uninterruptedly for a week. At the end of a week we remove full supers, set unfinished cases over to the other hive, add more supers, swing the metal door over to the other entrance, and work goes on another week. At the end of the week we again remove full cases, change back to the other hive, and so on once a week to the end of the season.

If, when first adjusting the controller, the colonies are of unequal strength, the supers are first placed on the weaker one, which may not be in condition to swarm for a week. Under such condition no change need be made until the end of a week.

The value of these bee-controllers has demonstrated itself to us very forcibly this season, at least so far; for, contrary to the reports received from our brethren east of us, we are receiving but little honey in sections. Colonies working singly are gathering just honey enough to place them in good swarming condition, neglecting the sections, while those colonies supplied with controllers are the only ones working in sections.

Red Oak, Iowa, July 18. E. Kretchmer.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
Illustrated Semi-Monthly
36 PAGES 7x10
$1.00 PER YEAR

Keep thee far from a false matter; and the innocent and righteous slay thou not: for I will not justify the wicked.—Exodus 23:7.

We have just made two "century runs." The first day we covered 106 miles, and the second day 110. A lady in the same party covered the same distance. We expect to make that "bike" visit quite a number of apiaries this summer. Of course, we expect to go along with it.

Some complaint has been made about the shiny paper that has been used on Gleanings, because the light would reflect and make the pages hard to read. The last carload is a heavier paper, with a less glossy surface, and we feel sure that the superior printing will be appreciated by our subscribers. This number is printed on it.

The editor of the *American Bee-keeper* is riding a bicycle. Good! It will be in order now for Bro. Hutchinson to get down off from his three-wheeled tricycle, and mount one of the luxurious pneumatic-tired safety bicycles. Bro. York, of the *American Bee Journal*, if we may judge from the advertisements in his paper, is also riding a safety.

Yesterday we sent out 54 queens by mail from our own and neighbor H.'s apiaries, to Australia; and we expect that a very large percentage of them will get through alive and in good order. We do not say this to boom our own trade in queens, but to indicate to other queen-breeders that the business of sending queens half way around the world is now a decided success; and not only have *we* been successful, but other queen-breeders as well.

It just now occurs to us that we are not hearing from our lady contributors as much as formerly. We do not wish them to feel backward about "speaking in meeting." A very seasonable as well as decidedly *fruitful* theme upon which to write is the canning of all kinds of fruit in honey—is it practicable, and, if so, how? Incidentally, it would be in order to give us a few good recipes for making various kinds of honey-cakes. Mrs. Axtell and Mrs. Harrison, some time ago, gave us some hints on this subject. Perhaps they can tell us more about it; and Miss Wilson too, we are sure, is in a position to give us some valuable hints also. Let us hear from many of the ladies.

Very recently we have had sent us several little consignments of broken comb, to be rendered up by us, and the senders to be credited with the amount of wax secured, less the expense of rendering. We never really thought that this paid. Old combs necessarily take several times the bulk required to take the actual bulk of wax when melted into nice clean cakes. It is far cheaper to render out your wax at home, and send on the product to us, than to send comb that is all dirt and cocoons, paying extra freight for the extra bulk and dirt. Three lots of broken comb were sent us recently, from as many different parties. By mistake they were all mixed together. Although the broken comb made several bushels of "stuff," we secured from the lot, after a great deal of labor—a half a day's time—only 5 lbs. of wax. The combs had been worm-eaten, were dirty, and we almost hesitated to undertake the job at all. Let us say right here, that, if you expect good wax out of your combs, do not, for any consideration, let worms get into them. If you are going to render them up at all, put them into the solar wax-extractor at once.

KIND WORDS FROM THE BEE-KEEPERS' ENTERPRISE.

During years past, some exceedingly kind and encouraging words have come from time to time in regard to the department of our journal called the Home Papers; but among them all I do not remember of any thing like the following, taken from the *Bee-keepers' Enterprise:*

As to the world at large, I do not believe there is a religious paper published that has done more good than Gleanings' Home Papers.

Now, friends, please do not imagine that I am vain enough not to think the above only a good-natured mistake. If it were true, I should be sorry for the religious press of our land. The main point I would direct attention to is this: The above appears in another journal, and in a bee-journal too. For many years it was the custom for bee-journals to pitch into each other, and especially to hold up the faults of brother-editors; hence it makes the above worthy of note. Does it not indeed foreshadow the coming of the new heavens and the new earth, when God's will shall be done on earth

as it is in heaven? By the way, permit me to say that, although the *Bee-keepers' Enterprise* is young, it is a very clean and pure little journal. May it receive the support and encouragement it justly merits. A. I. R.

BRO. YORK, of the *American Bee Journal*, commenting on the fact that the *Bee-keepers' Review* is going to try to have bee-keeping recognized at all the State Experiment Stations, states that he can not see why *every* State should spend its money for conducting its experiments. He suggests that, as Michigan already has one, that suffice for the North. He would have another one in Texas, for the South; and for the East, one in New York or Vermont; and for the West, one in California. We do not understand that Bro. Hutchinson would try to secure an apicultural experiment station in *every* State; but by making the effort there might be four or five States, variously scattered, that would establish such a station. Of course, it would be unnecessary to have *every* State experimenting and covering about the same ground. Some intelligent effort, supported by the bee-journals, ought to be made by some responsible body representing bee-keepers' interests; and the Bee-keepers' Union, as has been suggested, is just the organization to do it; for, under its new constitution, it can act in this matter as well as upon any other, with the consent of the Advisory Board.

FREE DISCUSSION, ETC., THROUGH GLEANINGS.

SINCE I have given a little space of late to those who wish to challenge the Christian religion, or, at least, some phase of it, a great many communications have come in, some on one side and some on the other, and many from men who take extreme views in certain directions. First, space will not permit us to use many of these articles; secondly, while we wish to give a full and free discussion of all subjects connected with home interests as well as bee culture, perhaps it may be well to add that the present managers of this journal are so well satisfied that the teachings of the Bible exhort to a higher state of morality, purity, and temperance than any other book in the world, we can not consistently give space to any thing that is decidedly irreverent toward that book. At the same time we are always glad to make room for any thing that will help people along in their search for truth and purity. A very few may charge us with being narrow-minded; to which I reply, that it is better to be narrow-minded than to poison the minds of the rising generation by something that leads only down to ruin and despair. A. I. R.

EXPERIMENTS AT THE APIARY OF VERNON BURT; A SHORT "BIKE" TOUR.

LAST week we took a short bicycle run down to our neighbor's apiary, and, as fortune usually favors us on such occasions, we found the proprietor in the yard, evidently "waiting for something to turn up." We leaned the bicycle against a tree, and in a few minutes more were talking with "the bee-man we didn't know before." After we had both deposited ourselves on hives for seats we remarked:

"Your bees seem to be working some."

"Yes, they are bringing in some honey."

"Our bees have been getting honey from some source, but we can not decide what. We think it is probably from white clover."

"My bees," said our friend, "seem to be quite busy on common thistle."

"But," said we, "we did not know you had enough of them around here to make such a hum."

Although the sheep had gnawed the grass down closely throughout the yard, they had left the thistles entirely alone. It was about the only herbage of any kind that they did not touch. These Mr. Burt left, knowing that they sometimes produce honey.

"See," said Mr. Burt, rising from his seat; "here are five bees on one head."

True enough. We counted three on one head; four on another; several others, five; and on another one, six bees, all busy, almost standing on their heads trying to get down to the treasured sweets. We never saw bees working on any plants—not even the Chapman honey-plant—more busily than they were on these few thistles within range.

"This," said Mr. B., "is about the way bees are working on all the thistles."

"You must have a good many of them in your vicinity."

"Yes, a good many. I take no particular pains to cut them down. In dry seasons they are more apt to yield honey; and they can stand a drouth, because they send their roots down so deep into the ground."

"What is the quality of the honey?"

"It seems to be equal to clover," said he; "but it is not possible, following so closely on the heels of clover, to determine its quality exactly; but it certainly will not injure the fine quality of the clover."

Glancing at a few more thistles we said that we noticed that there were a good many more heads to open up.

"Yes," said Mr. B., "they will yield honey for a good while yet."

"How did those five-banded yellow bees pan out?"

"Good," said our friend. He then took us over to a couple of hives containing queens that came from Mrs. Atchley's apiary. They were beautiful bees, and they piled in a large amount of honey.

"Do you find them gentle?"

"I do," said he. "I am going to put in a good many more."

He had already placed his order, and his queens were coming in, in small installments, to take the place of hybrid queens.

"By the way, how do your hybrids compare, any way, with pure Italians?"

"Not any better, so far as I can see," he replied, "and they are not nearly as nice to handle."

"But don't they make whiter honey?"

"Perhaps a little; but I run principally, you know, for extracted honey."

"You certainly find that they shake off the combs better for extracting, don't you?" said we.

"That is of little importance," said he, "for I use bee-escapes. There, you can see them on the hives now."

"How long before the bees are out?"

"I do not know exactly," he replied; "but I know that the supers put on the night before are clear the next morning, with the exception of, perhaps, two or three bees."

"What escapes have you been using?"

"Mostly the Porter; and you remember that I got at your place two or three of the Lareese escapes. They are doing equally well."

"Oh! how about those Langdon non-swarmers that we gave you to try?" we exclaimed, changing the subject.

"It was so late that I did not have an opportunity to put them on; and, besides, I used chaff hives, and the Langdon devices require the boring of a hole right through the front of a hive. I do not think they will work; but another season I intend to give them a careful trial."

Some weeks previously we had given to Mr.

Burt a number of the 1893 Pratt automatic hivers.

"How do these work?" we asked.

"Perfectly. Every one caught its swarm, and the bees went to work in their new apartments just as though they had been hived there in the good old-fashioned way."

"That is, you regard the Pratt hiver as a success?"

"I do, decidedly," he answered; "and when I establish my out-apiary next year I expect to use quite a number of them. I notice," said he, changing the subject this time, "what you had to say about swarms without queens generally going back to their own hives. I never had any trouble from two or more swarms without queens uniting in the air and going into the wrong hive, and I have practiced clipping queens for a good many years. I can not understand why Mr. Taylor's experience should be so different from mine."

"Well, there is one thing," we remarked, "when bees get on a perfect craze for swarming they will do almost any thing contrary to rule. At the time of Mr. Hutchinson's visit, we should judge that the swarming mania was having full sway."

"To change the subject, we notice that your hives are painted the ocher tint."

"Yes, I like it, and I don't see why you changed."

"Principally because the hive-covers got too hot."

"But," said he, "I paint my *covers* all white."

"Yes, we noticed that. As your hives are principally double-walled, the ocher tint would have the advantage; and painting the covers white would render them nearly as acceptable to the bees as any cover could be."

We hope, in a few more numbers, to present you a picture of Mr. Burt's apiary—not because it is a model in its way, but because it is a place where many of our new appliances will be tested, and the reports made in Gleanings. Mr. B. is a honey-producer. That is his principal business, although he has a farm of 25 acres that he runs in connection with the bees. A honey-producer is in position to test certain appliances intended for that class of people more thoroughly and more carefully than any one else. One may be a good experimenter but not a good honey-producer. Mr. B., as nearly as we can judge, combines the best qualities of both.

On page 635 of this issue, Mr. J. D. Fooshe, who raises for us in the South so many queens, gives some valuable improvements which he has made in queen-rearing. The idea of using drone comb for queen-cell cups is as novel as it is unique. If it will work successfully with others it will prove to be quite a boon. Queen-breeders will do well to read his article carefully; and we hope that many of them will give his method a test before the season is over, and report for Gleanings.

THE WELSH FOR THE WORD "BEE."

The editor of *Y Drych*, a Welsh paper printed in Utica, N. Y., kindly informs us that the word bee in Welsh is gwenynen; bees, gwenyn; honey-bees, mêl-wenyn; a honey-bee, mêl-wenynen; the honey-bee, y fêl-wenynen; the honey-bees, y mêl-wenyn.

TWO SWARMS UNITE WITHOUT A QUEEN, AGAIN.

As an additional proof of our proposition some time ago, that swarms in the air, without queens, are not nearly so apt to unite, the following, just received, will speak for itself:

In regard to what Mr. Hutchinson says on page 614, about swarms without queens returning and going into the wrong hive, I wish to say that, for the last ten years, I have had all my queens clipped, and never knew a swarm to go back into any other hive than their own. During that time I have averaged about 40 colonies each year. I can not see why Mr. Taylor's bees should act so differently from mine. John Major.

Cokeville, Pa., Aug. 4.

Remember, we do not say that swarms will *always* go back to their hive when not accompanied by the queen. We are simply trying to get at the *general* rule. It may appear that no particular importance attaches to this; but if swarms are less apt to unite when the queen of the parent colony is clipped, it is one point in favor of clipping, or, what may be practically the same thing, using drone-guards or Alley traps over the entrances. Let's have reports.

THE BUSINESS OF COLLECTING POSTAGE-STAMPS.

One of our subscribers, Mr. H. A. Bricker, of Bellevue, Pa., who makes a business of collecting stamps, suggests to me, in a pleasant letter, that I probably made a mistake, and that those who collect stamps at the present time do not let them go into the hands of those who would defraud the government. He explains that a collection of the stamps that have been used in the United States, since they were first introduced, teaches us both history, geography, and politics, besides giving us excellent portraits of some of America's best and greatest men; and, further, that this craze for stamps teaches the child, man, or woman, a great deal that they might not have known otherwise. The boy who is a stamp-collector will often know very much more than his teacher, in regard to matters connected with the history and politics of our country. I am always glad to be corrected. I will simply say that I got my information in regard to the matter of passing canceled stamps from no less authority than the *Scientific American*. As a proof of what friend Bricker says, he tells us that one-cent stamps used before 1870 are worth 3 cts. each; five and ten cent stamps, 15 cts. each, etc. Of course, nobody would advertise to pay more than the face value of a stamp, if he were going to try to defraud the government by using it again.

POTATO-BUGS—THE OLD-FASHIONED KIND THAT FLY.

Since the dry weather, the new old-fashioned bugs, or old new-fashioned bugs, as you may choose to call them, have been doing a great deal of mischief in our vicinity. I remember of seeing them when I was a boy, between thirty and forty years ago; but the later generation hardly seems to know what to make of them; and, in fact, they are getting to be a rather serious problem with the old as well as with the young potato-growers. On our ranch we tried pyrethrum, then Paris green; but as that did not seem to bother the bugs very much we began to drive them off as we used to do years ago. This, however, is too slow and uncertain. They come back again and do a pile of damage in just a little while. Finally I told the boys to take hoes, sticks, and their feet, and just "make 'em sick." That did the business. You take a man with big feet, and he can get away with a good lot of bugs by trampling them in the dirt. Where the ground is as soft as ours is, however, he has got to give his heel or toe a twist, or Mr. Bug will get up, shake off the dust, and scamper off, not very much hurt. I wrote to friend Terry, and told him I wanted to know right away what to do—that is, if there was any thing better than our way. He says he does not know that he can help us much. He says, however, after driving them

off they will sometimes cluster on bushes or fences, etc.; and since he mentions it, I have seen them cluster on the side of the barn, almost like a swarm of bees. Well, he says that, when clustered in this way, he burns them up with a little straw, shakes them into boiling water, or into water with a little coal oil on the surface. Some people imagine that Paris green seems to do good because the operation scares the bugs and drives them away. I put this in here because it may be helpful to some who have been wondering, like myself, whether there was not a better way. On my wheel-rides I have several times seen fields of potatoes where the owners were driving flocks of sheep through them in order to frighten the bugs. No doubt it would do the business; but with the potatoes only half grown, I should fear that the remedy might be "worse than the disease."

FRANKLIN COLLEGE,

New Athens, O., opens 69th year Sept. 4. Board, rent of books, and room, *$1.80* to *$2* a week. Board, room, books, tuition, fuel, and light cost only *$120* a year of 40 weeks; total expenses, *$135*. Diplomas for classical, scientific, commercial, normal, music, art, shorthand, and elocution courses. Sent out U. S. Senators, Governors, etc., and 263 ministers, ⅔ of total alumni. No saloons. Healthful. Largest attendance yet. Send for catalogue.

W. A. WILLIAMS, D. D., Pres't.

SAY!

Did you know *TESTED* that Green sold *QUEENS* OF HIS CHOICE STRAIN OF YELLOW HUSTLERS

For Only $1.00?

It's so. Before July 1st, $1.50. Mismated queens, 35c. Have your orders booked now. Full colonies and nuclei at low prices. 12tfdb

J. A. Green, Ottawa, Illinois.

Golden Queens From Texas.

My bees can not be surpassed for business, beauty, and gentleness. Safe arrival and satisfaction guaranteed. Untested queens—March, April, and May—$1 each. **50** fine Tested Queens for early orders, $1.50 each. Order early. Send for price list. 5-16db.

J. D. GIVENS, Box 3, Libson, Tex.

A *COMPLETE PRINTER'S OUTFIT* for newspaper and job office for sale for $350.00 cash. This sale is to reimburse the endorsers of a note, and is a rare bargain. For particulars write to E. M. COUNT & Co., New Smyrna, Fla.

ONE DOLLAR

Will purchase a TEN-DOLLAR QUEEN by return mail.

HENRY ALLEY, Wenham, Mass.

IMPORTED ITALIAN QUEENS

$1.00 each for their tested daughters; untested, 60c. When we say tested we mean the very best queens that produce all three-banded workers and are fine for breeders. For gentleness and industry there is none better. Safe delivery. Send P. O. money order on Decatur, or money by registered letter. No stamps. **CLEVELAND BROS., Decatur, Newton Co., Miss.**

In responding to this advertisement mention GLEANINGS.

By Return Mail,

From that queen-specialist Jas. Wood, No. Prescott, Mass. Queens yellow to the tip, mated with handpicked drones that have solid-yellow abdomens. These drones are from a different strain than the queens, hence a direct cross is secured. As there are no other bees within several miles of my yards I can warrant them to produce a large per cent of golden workers. I have several that produce workers showing 4 segments solid yellow, with a little yellow band on the 5th; and nearly all will produce from 60 to 95 per cent of the so-called 5-banded workers. These queens will be sold at my regular price during the past eight years, 75 cts. each.

Please mention this paper.

FIRST ORDER

Comes, first sent. 50 colonies of bees in 8-frame L. Simplicity hives with portico front, with yellow Italian queen, large, young, and prolific. Moderately light with honey, so they can be shipped safely, $3.00 each; with tested queen, $3.50. Untested queens, 75 cts. each; tested, $1.00.

MRS. OLIVER COLE, Sherburne, Chenango Co., N. Y.

Italian Bees *$6.00* in Dovetailed hives, in good condition. Root's chaff hives, $2.00. Bee supplies cheap. I am moving to the city to practice law, and must sell.

J. BASSETT, 368 Ridge Ave., Allegheny, Pa.

Queens, Yes, Queens,

And good ones too. My sales have been so large I have just caught up with orders. But I am now prepared to send by return mail:

Tested, each	$1.50
Warranted, each	.80
" per ½ dozen	4.50
" per dozen	8.00
Untested, each	.70
" per 10	6.00

Now, if you want good stock at a low price, send in your orders at once. Address

W. W. CARY, Colerain, Mass.

One of the oldest and largest breeders in America.

16-tfbd Mention GLEANINGS.

If You Wish to Smile,

Try my fine Italian queens. Either 3 or 5 banded, bred in different yards, 75 cts. each; $4.25 for 6, or $8.00 per doz. Prices to dealers, and by the quantity, on application. Fine breeders, $5.00; always on hand. Prices for those that produce strictly 5-banded bees, on application. Remember, I guarantee safe arrival, and satisfaction in the bounds of reason. *MRS. JENNIE ATCHLEY, Greenville, Hunt Co., Tex.*

A large, yellow, prolific queen, 75c; 6 for $4. Breeders, the very best, strictly pure, guaranteed to breed all yellow queens, $2. Satisfaction given. Reference, A. I. Root.

W. H. LAWS, Lavaca, Seb. Co., Ark.

ITALIAN QUEENS at 75 cts., or three for $2.00. MRS. A. A. SIMPSON, Swarts, Pa. Box 48.

Bingham Perfect Smokers.

CHEAPEST AND BEST ON EARTH.

Patented 1878, 1882, and 1892.

The Doctor, 3½-inch stove, largest smoke and fuel capacity made, $2.00; Conqueror, 3-inch stove, $1.75; Large, $1.50. Postpaid per mail. They all have wide shields, movable bent nozzle, coiled steel wire handle, and inverted Bingham bellows, with Bingham cleated joints. Perfect in principle, perfect in detail, and 14 years the standard in every country.

The Bingham & Hetherington uncapping-knife also belongs in the Perfect series; $1.15.

Original, Unimproved Bingham Bee-Smokers.

Our smaller smokers are as we have always made them. Little Wonder, narrow shield, 1¾-inch stove, 65 cts.; Plain, narrow shield, 2-inch stove, $1.00; Extra, 2-inch stove, wide shield, $1.25.

They are a great convenience in handling the cone and smoke. We can recommend it to all bee-keepers as being just the thing.—Quein & Fyke, Ettawanda, Cal.

The best to be had.—C. J. Donaldson, Lapeer, Mich.

As perfect as need be.—H. M. Seely, Harford, Pa.

It is just what I wanted.—J. C. Keithley, Shacklefall, Mo.

They are a desirable attachment.—Walter S. Pouder, Indianapolis, Ind.

I would almost as lief do without the smoke as without the attachments.—Henry F. Hagen, Rocky Ford, Col.

To sell again, or rates or circular, send card to **T. F. BINGHAM, Abronia, Mich.**

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J. M. JENKINS, WETUMPKA, ALABAMA.

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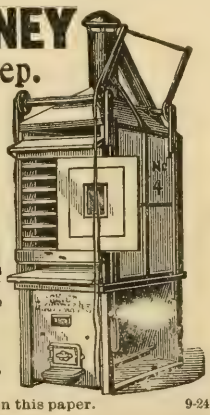
Golden Italian Queens

that have given such general satisfaction. If you want the best, send in your orders. Single queen, $1; six for $4.50. Circular free.

CHAS. D. DUVALL, Spencerville, Md.

MAKE MONEY While You Sleep.

STAHL'S EXCELSIOR FRUIT DRIER



Evaporates Fruit DAY and NIGHT. Catalogue free upon application.

Address WILLIAM STAHL EVAPORATOR COMP'Y, QUINCY, ILL.

Please mention this paper. 9-24db

Bee-Hives.

Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue 23-22db

W. H. PUTNAM, River Falls, Pierce Co., Wis.

California Bee-Keepers!

Can obtain ROOT'S GOODS, also California-made Supplies, from

WM. STYAN, SAN MATEO, CAL.

☞In responding to this advertisement mention GLEANINGS.

For new price list of

PURE ITALIAN BEES AND QUEENS, AND WHITE AND BROWN FERRETS, ADDRESS N. A. KNAPP, ROCHESTER, LORAIN CO., O.

Please mention this paper. 4tfdb

Muth's

Honey-Extractor.

Square Glass Honey-Jars, Tin Buckets, Bee-hives.

Honey-Sections, &c., &c.

Perfection Cold-Blast Smokers.

APPLY TO

CHAS. F. MUTH & SON, Cincinnati, O.

Send 10-ct. stamp for "Practical Hints to Bee-keepers." Please mention this paper.

TAKE NOTICE!

BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH, 14tfdb New London, Wis.

READY AGAIN!

My location enables me to rear those nice Golden Queens, by Doolittle's method, as cheaply now as at any time in the North. Untested, 75c; 6 for $4.00; 12, $7.50. Last year's tested, $1.25; select, $1.75; breeder, $2.50. Safe arrival and satisfaction guaranteed.

J. B. CASE, Port Orange, Vol. Co., Fla. 5tfdb

5=Banded Golden Italians.

Three or five banded queens, each, 75c; 6 for $4.25. Nuclei and full colonies cheap. Catalogue free.

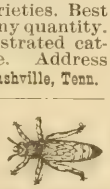
9-tfdb *Chas. H. Thies, Steeleville, Ill.*

Root's Goods AT ROOT'S PRICES can be had at Des Moines, Iowa. Address Jos. Nysewander.

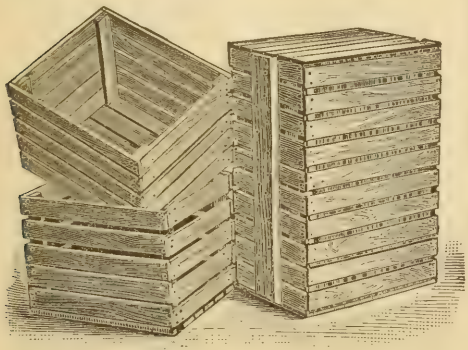
Eggs and Plants. Several varieties. Best quality. Any quantity. Finely illustrated catalogue free. Address GEER BROS., St. Marys, Mo, or H. B. GEER, Nashville, Tenn.

BEE-HIVES AND SUPPLIES

Send for catalogue free. Address **SAMUEL JONES,** Highland Park College, Des Moines, Iowa. 1-19db



BUSHEL BOXES.



The above cut shows our new-style *all-slatted bushel box*. We have two other styles; one has slatted bottom and sides with solid ends in three pieces called the *slatted bushel box*. The other has solid ends and close bottom and sides, and is bound with galvanized iron and called the *galvanized bound box*. These boxes were devised by T. B. Terry for handling potatoes, for which purpose nothing could be handier. The potatoes are picked up into the boxes in the field and left in them till sold. Other crops, such as cucumbers, tomatoes, and apples are being handled in these same boxes. They are of such a size that two go crosswise in an ordinary wagon-box. Outside measure is 14¼x16⅞x12½ deep, and they hold a bushel of potatoes level full so they can be piled one upon another. The above cut shows two *all-slatted* boxes nailed up, and a bundle of 15 alongside; 13 of the 15 are in the flat, packed inside the other two, and nails of the proper kinds are included. The *slatted* and *galvanized bound* boxes are put up in the same way, except there are only 12 in a package instead of 15. Each package weighs about 85 to 90 lbs.

PRICE LIST.

All-slatted bushel box, per crate of 15.....	$1 50
Slatted bushel box, per crate of 12.....	1 50
Galvanized bound bushel box, per crate of 12....	2 10

In lots of ten crates, 5 per cent discount will be deducted. Price each, nailed, 15, 18, and 22 cents, respectively. A 20-page pamphlet called Handling Farm Produce, telling all about these boxes, mailed free on application.

A. I. ROOT, Medina, O.

A Safe Investment.

In these days of big Bank failures, and lack of confidence everywhere, what can be better than **permanent farm improvements?** You knew your bank was all right, but went early to avoid the rush, and now what will you do with the money? Answer. Build Page fence, and the panic will prove a blessing to you.

PAGE WOVEN-WIRE FENCE CO., Adrian, Mich.

☞In responding to this advertisement mention GLEANINGS

IF YOU WANT BEES

that will just "roll" in the honey, try Moore's strain of Italians, the result of 14 years' careful breeding.

Wm. Stevenson, Pasadena, Cal., says: "I have tried queens from several of the best queen-raisers, but have found none that equal your strain."

Reduced prices: Warranted queens, 80c each: 3 for $2.00. Strong 3-frame nucleus, with warranted queen, $2.50. Safe arrival and satisfaction guaranteed. Those who have never dealt with me, I refer to A. I. Root, who has purchased of me over 600 queens. Circular free.

J. P. MOORE,
11-12d *Morgan, Pendleton Co., Ky.*

☞In responding to this advertisement mention GLEANINGS.

50 cts. each for untested queens from best imported mothers. **W. C. Frazier, Atlantic, Iowa.**

ITALIAN QUEENS at 75 cts., or three for $2.00. MRS. A. A. SIMPSON, Swarts, Pa. Box 48.

Eastern Supply House.

We furnish everything used in the apiary, and at bottom prices. Illustrated circular free.

I. J. STRINGHAM, 105 Park Place, N. Y.

21 20db Please mention this paper.

Cash for Beeswax!

Will pay 21c per lb. cash, or 24c in trade for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 28c per lb., or 30c for *best selected wax*.

Unless you put your name *on the box*, and notify us by mail of amount sent, I can not hold myself responsible for mistakes. It will not pay as a general thing to send wax by *express*.

A. I. ROOT, Medina, Ohio.

REID'S SMALL FRUITS, TREES, VINES, ROSES, ORNAMENTALS.

REID'S Greatest Success "Timbrell Strawberry." "$500.00 IN GOLD for Best 10 BERRIES. Crates and Baskets. New Fruits a specialty. Have you received our Catalogue? If not, why not? Buy direct and save one-half. Illustrated Catalogue *FREE.* E. W. REID, BRIDGEPORT, OHIO.

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Queens Yellow to the Tip.

Great big yellow beauties, worth many times their weight in gold. That is the kind of queens Trego raises.

Who Buys Them?

Geo. E. Hilton, W. Z. Hutchinson, W. S. Hart, J. F. McIntyre, Jas. A. Green, and about 500 others not so well known. For the rest of the season there will be very few drones near me except very yellow ones, and nearly every queen should get 4 and 5 banded bees.

Inclosed find $1.75 for one of your special mated queens. One of your queens gave me 70 lbs. surplus and the other 40 lbs. *Three-fourths of the bees here have made no surplus.* J. F. TRUESDELL.
Duncan Falls, O., Aug. 9, 1893.

* * * * Stanley Bros. say she is the yellowest queen they ever saw. H. C. MELLEN.
Dixon, Ill., Aug. 10, 1893.

The quietest colony I have is from the dollar queen I got of you; they have given the most honey I have got from any one colony this season.
Pances Park, Fla., July 21, 1893. JOHN ABBOTT.

Inclosed please find $1.00 for a queen. I can get them nearer home, but yours are the best I have in my apiary. C. W. BRENNER.
Newburgh, Ind., Aug. 8, 1893.

The 6 queens came to hand yesterday, in fine condition, not a dead bee in the lot; the queens looked as fresh and plump as though just taken from the hives. They are decidedly the finest-looking queens I ever bought; a friend from another county helped me introduce them, and he said he had never received one that came near them for beauty, and had bought of the most noted breeders. I received one from —— yesterday, and can say nothing in praise for looks. JAS. L. GRAY,
Wholesale and Retail Supply Dealer.
St. Cloud, Minn., Aug. 10, 1893.

One warranted queen, $1.00; six for $5.00. Money-order office, Cable, Ill.

S. F. TREGO,
Swedona, = = = Ill.

☞In responding to this advertisement mention GLEANINGS

FOR SALE OR EXCHANGE.

Ten colonies in double dovetail, Van Deusen reversible frames, winter cases, wood-wool cushions, mineral-wool packing (see articles in GLEANINGS, May 1, '91, and subsequent No.). Will exchange for clover comb honey, or offers.
J. B. ENOS, Connellsville, Pa.

5-Banded Golden Red-Clover Bees.

If you want bees that will work on Red Clover, try one of our five-banded queens. Queens in Sept., untested, 80 cts.; ½ doz., $4.00; tested, $2.00; select, $2.50; the very best, $4.00.

LEININGER BRO'S, Ft. Jennings, O.
Please mention this paper. 5tfdb

BEES FOR SALE.

Thirty colonies in No. 1 shape, mostly in new L. hives. The lot for $100.00, or $3.50 each in small lots. Pure Italian, $5.00.
W. D. SOPER, Jackson, Mich.

SAY!

Did you know *TESTED* that Green sold *QUEENS* OF HIS CHOICE STRAIN OF YELLOW HUSTLER

For Only $1.00?

It's so. Before July 1st, $1.50. Mismated queens, 35c. Have your orders booked now. Full colonies and nuclei at low prices. 12tfdb

J. A. Green, Ottawa, Illinois.

Wants or Exchange Department.

Notices will be inserted under this head at one-half our usual rates. All advertisements intended for this department must not exceed five lines, and you must SAY you want your adv't in this department, or we will not be responsible for errors. You can have the notice as many lines as you please, but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices offering articles for sale, can not be inserted under this head. For such our regular rates of 20 cts. a line will be charged, and they will be put with the regular advertisements. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To sell or exchange for honey or offers, one Shipman oil-engine, 2-horse power, used but little. Address
E. M. TENNANT, Willett, Cortland Co., N. Y.

WANTED.—To exchange strawberry and raspberry plants, bee-hives and fixtures, 100-egg Reliable incubator, instructive books and periodicals, etc., for Italian nuclei or offers.
MICKEL FARM, New Lisbon, N. Y.

WANTED.—To exchange veterinary library and instruments, almost new, for bees or nuclei.
H. C. DENSLOW, 6 Edmond St., Rochester, N. Y.

WANTED.—To exchange small improved place of 4½ acres in northern settlement on Cumberland Plateau; climate fine for lung troubles. Will trade for small place north or for cash. Also electropoise for sewing-machine or offers.
A. F. AMES, Grand View, Tenn.

HONEY COLUMN.

CITY MARKETS.

ALBANY.—*Honey.*—We have received 20 consignments of honey up to date, of which 7 are all sold nd acc't sales rendered to consignors. The other lots are moving off freely. We have obtained 14 to 15c for most of it, none of which could be called fancy stock; the latter would sell at 16@17c. Extracted moving very slowly at 6@8c. From information received the crop will not be as large as expected; bees are not doing much on buckwheat.
Aug. 23. CHAS. MCCULLOCH & CO.,
393, 395, and 397 Broadway, Albany, N. Y.

CHICAGO.—*Honey.*—The receipts of honey continue liberal, and there is very little change in the price of the best grades of white comb, which brings 15@16c per lb. So far there is very little accumulation, as we have been successful in selling soon after arrival. The darker grades are not meeting with very much demand. Extracted is ruling easy, at from 5@7c, according to color, flavor, body, and style of package. Beeswax is inactive, at from 20@22c per lb. R. A. BURNETT & CO.,
Aug. 18. 161 So. Water St., Chicago, Ill.

CHICAGO.—*Honey.*—Honey this year is being placed on the market earlier than last season, but the demand is restricted and will be light until small fruits are out of the market; and with the prospect of a large crop, buyers will be particular as to quality, and the best will find ready sale upon arrival. No. 1 comb, 16; extracted as to quality, 5@7. Beeswax, 22@24.
We extend to all bee-keepers who visit the city an invitation to call on us, likewise to make use of our office, in care of which they can have their mail addressed, and from which they can write their letters. Hotel accommodations secured.
Aug. 18. S. T. FISH & CO.,
189 So. Water St., Chicago, Ill.

MINNEAPOLIS.—*Honey.* The honey market has been very brisk this week, and there has been one carload of California honey received here by brokers and sold at 14c. The color is equal to that of the finest Wisconsin honey, consequently it will stop the sale to some extent. Eastern shipments of honey also have a tendency to lower prices at least two cents. Fancy white, in 1-lb. sections, 16c; extra fancy California 1-lb. sections, 14c; choice white honey, 15c; choice dark, 10c; fancy dark, 13; extracted, 30-lb. tubs, 9c; 300-lb. barrels, 7c.
J. A. SHEA & CO.,
Aug. 22. Minneapolis, Minn.

BUFFALO.—*Honey.*—The demand for strictly fancy 1-lb. comb honey is improving just a little, and selling fairly at 14@15c. No. 2, 7@12. No demand as yet for extracted. We would advise holding all kinds a while unless funds are badly needed. If so, advise us, and perhaps we can advance 10c per lb. on a few tons of fancy 1-lb. comb, and remit the balance when sold. BATTERSON & CO.,
Aug. 17. Buffalo, N. Y.

CINCINNATI.—*Honey.*—Demand is fair for extracted honey at 5@8c per lb. on arrival, with a fair supply. Quite a number of small arrivals of nice comb honey found a ready sale during the last few weeks. Demand is fair. The close money market causes slow collections and makes itself felt on the demand for all merchandise, including honey. There is a fair demand for beeswax at 20@23c per lb. for good to choice yellow. CHAS. F. MUTH & SON,
Aug. 22. Cincinnati, O.

BOSTON.—*Honey.*—Comb honey in 1-lb. sections selling at 16@17c. Extracted, 7@8c; demand high.
BLAKE & RIPLEY,
Aug. 19. Boston, Mass.

SAN FRANCISCO.—*Honey.*—Crop very choice. We quote white at 5@5½; light amber, 4¾@5. One-lb. comb is in good demand at 10@11. Beeswax, 24@26.
SCHACHT, LEMCKE & STEINER,
Aug. 22. San Francisco, Cal.

DETROIT.—*Honey.*—Comb honey selling at 13@15c; the latter figures for fancy. Extracted, 7@8. Beeswax, 23@24c. M. H. HUNT,
Aug. 19. Bell Branch, Mich.

KANSAS CITY.—*Honey.*—The receipts are fair; demand light. We quote 1-lb. sections, white, 16@17c; amber, 12@15. Extracted, white, 6½@7; amber, 5@6. Beeswax, 18@20c.
CLEMONS, MASON & CO.,
Aug. 19. Kansas City, Mo.

ALBANY.—*Honey.*—Demand is improving for comb and white extracted honey. We have received about 600 cases so far, and sold well. White comb is selling at 15@16; mixed, 13@14; dark, 12@13. Extracted, white, 7½@8; mixed, 7@7½; dark, 6@6½. Beeswax, steady, 26@27. Correspondence solicited.
H. R. WRIGHT,
Aug. 25. 326, 328, 330 Broadway, Albany, N. Y.

CLEVELAND.—*Honey.*—During the very warm weather there has not been very much call for honey; but we think that, as it gets cooler, demand will brighten up. We are placing good No. 1 white 1-lb. sections at 16¼@17. Beeswax, 23.
WILLIAMS BROS.,
Aug. 18. 80 & 82 Broadway, Cleveland, O.

KANSAS CITY.—*Honey.*—Receipts of honey light. White comb, 1-lb., 17; light weight, 15. Extracted, white, 7½; amber, 6½@7; dark, 5@5½. Stock very light. Beeswax in good demand, 22@25.
HAMBLIN & BEARSS,
Aug. 19. Kansas City, Mo.

ST. LOUIS.—*Honey.*—No material change; market well stocked with both comb and extracted. We quote comb at 10@16; extracted, in barrels, 4¾@5¼; in cans, 6@6½. Beeswax, 21.
D. G. TUTT GROCER CO.,
Aug. 21. St. Louis, Mo.

WANTED.—To buy 50,000 lbs. of white comb honey in small single-tier cases.
B. WALKER, Evart, Mich.

"DEAD RIPE" HONEY—clover and linn. Been "tiered up" on the hives through the hot weather.
OLIVER FOSTER, Mt. Vernon, Linn Co., Iowa.

FOR SALE.—2000 lbs. of fine comb honey, in 1-lb. sections, 24-lb. cases, and 2000 lbs. of clover and basswood honey, in 60-lb. square jacket cans. Sample of extracted honey by mail on application.
EZRA BAER, Dixon, Illinois.

BUFFALO, N. Y. Unsurpassed Honey Market.
BATTERSON & CO. Responsible, Reliable, Commission Merchants. 18tfdb **and Prompt.**

CHAS. ISRAEL & BROS., 110 Hudson St., N. Y.
WHOLESALE DEALERS & COMMISSION MERCHANTS. *Honey* and *Beeswax.*
Established 1875.

White SHIPPING-CASES.
To have your honey sell well, use our beautiful cases, 12 and 24 pound sizes. Send for illustrated catalogue of every thing needed in the apiary.
M. H. HUNT, Bell Branch, Mich.

Root's Goods for the West.
Address Jos. Nysewander, Des Moines, Ia.

ONE DOLLAR
Will purchase a TEN-DOLLAR QUEEN by return mail.
HENRY ALLEY, Wenham, Mass.

FOR SALE AT A BARGAIN.
One 5 H. P. engine, one 6 H. P. boiler on combined base, in good working order.
V. W. KEENEY, Shirland, Ill.

A BARGAIN.
One A. I. Root's best Imported queens 2 years old, $1.50; one A. I. Root's extra select tested queens, one year old, $1.00; a lot of young tested queens, 60 cts.; untested, 40 cts. Above are all extra fine queens. Safe delivery.
L. H. ROBEY, Worthington, W. Va.

QUEENS.

I have a large lot of fine, untested, Italian queens, and to dispose of them as quickly as possible, that the nuclei may be united, I offer them at 75c each, or a queen and the REVIEW from July (when the Experiment Apiary reports began) to the end of the year for an even $1 00.

W. Z. HUTCHINSON, Flint, Mich.

PORTER BEE ESCAPES are used and pronounced a great labor-saving implement by **Chas. Dadant & Son, Prof. A. J. Cook, Chas. F. Muth, Jno. S. Reese, J. H. Martin, John Andrews, F. A. Gemmell, Wm. McEvoy, A. F. Brown, Thomas Pierce,** and many other prominent bee-keepers. Descriptive circular and testimonials mailed free. PRICES:—Each, post-paid, with directions, 20c.; per doz., $2.25. *Return them and get your money back after trial if not satisfied.* For sale by dealers. Address **R. & E. C. PORTER LEWISTOWN, ILL.**

Queens, Yes, Queens,

And good ones too. My sales have been so large I have just caught up with orders. But I am now prepared to send by return mail:

Tested, each	$1.50
Warranted, each	.90
" per ½ dozen	4.50
" per dozen	8.00
Untested, each	.70
" per 10	6.00

Now, if you want good stock at a low price, send in your orders at once. Address

W. W. CARY, Colerain, Mass.

One of the oldest and largest breeders in America.

16-tfbd Mention GLEANINGS.

FIRST ORDER

Comes, first sent. 50 colonies of bees in 8-frame L. Simplicity hives with portico front, with yellow Italian queen, large, young, and prolific. Moderately light with honey, so they can be shipped safely, $3.00 each; with tested queen, $3 50. Untested queens, 75 cts. each; tested, $1.00.

MRS. OLIVER COLE,
Sherburne, Chenango Co., N. Y.

FLORIDA. For Sale—ten acres of good land, five in young grove, part bearing; house, barn, and out-houses, apiary, and store building, with stock of general merchandise. Apply to

H. P. WILLIAMS, Richmond, Lake Co., Fla.

By Return Mail,

From that queen-specialist Jas. Wood, No. Prescott, Mass. Queens yellow to the tip, mated with hand-picked drones that have solid-yellow abdomens. These drones are from a different strain than the queens, hence a direct cross is secured. As there are no other bees within several miles of my yards I can warrant them to produce a large per cent of golden workers. I have several that produce workers showing 4 segments solid yellow, with a little yellow band on the 5th; and nearly all will produce from 60 to 95 per cent of the so-called 5-banded workers. These queens will be sold at my regular price during the past eight years, 75 cts. each.

Please mention this paper.

If You Wish to Smile,

Try my fine Italian queens. Either 3 or 5 banded, bred in different yards, 75 cts. each; $4.25 for 6, or $8.00 per doz. Prices to dealers, and by the quantity, on application. Fine breeders, $5.00; always on hand. Prices for those that produce strictly 5-banded bees, on application. Remember, I guarantee safe arrival, and satisfaction in the bounds of reason.

MRS. JENNIE ATCHLEY,
Greenville, Hunt Co., Tex.

FRANKLIN COLLEGE,

New Athens, O., opens 69th year Sept. 4. Board, rent of books, and room, ***$1.80*** to ***$2*** a week. Board, room, books, tuition, fuel, and light cost only ***$120*** a year of 40 weeks; total expenses, ***$135.*** Diplomas for classical, scientific, commercial, normal, music, art, shorthand, and elocution courses. Sent out U. S. Senators, Governors, etc., and 263 ministers, ⅔ of total alumni. No saloons. Healthful. Largest attendance yet. Send for catalogue.

W. A. WILLIAMS, D. D., Pres't.

A large, yellow, prolific queen, 75c; 6 for $4. Breeders, the very best, strictly pure, guaranteed to breed all yellow queens, $2. Satisfaction given. Reference, A. I. Root.

W. H. LAWS, Lavaca, Seb. Co, Ark.

Oh, Mamma!

Have you heard of the

FREE

200-Page Bee-Book

given to every **NEW** Subscriber to the old

AMERICAN BEE JOURNAL?

Oldest, Largest, Best, Cheapest and the only **Weekly** Bee-Paper in America. 32-pages; **$1** a year. *Sample free*

GEO. W. YORK & CO

56 Fifth Avenue, CHICAGO, ILL.

To new subscribers: the journal alone sent for 3 months for 20 cents.

Great Reduction.

Sections at greatly reduced prices. Hives, Shipping-cases, etc., at Bed-Rock Prices. Write for free Illustrated Catalogue and Price List.

G. B. Lewis Co.,
Watertown, = = = Wis.

1tfdb Please mention this paper.

BIG DISCOUNT on Foundation and Sections. Thin foundation, 50 cts. per lb.; brood, 40 cts. No. sections, $2.75 per M. Every thing cheap, price list free. E. H. TRUMPER, Bankers, Mich.

PATENT WIRED COMB FOUNDATION

Has No Sag in Brood-frames.

Thin Flat-Bottom Foundation

Has no Fishbone in the Surplus Honey.

Being the cleanest, it is usually worked the quickest of any foundation made.

J. VAN DEUSEN & SONS,
Sole Manufacturers,
Sprout Brook, Montgomery Co., N. Y.

☞In responding to this advertisement mention GLEANINGS.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
PUBLISHED BY A. I. ROOT
$1.00 PER YEAR MEDINA OHIO

Vol. XXI. SEPT. 1, 1893. No. 17.

STRAY STRAWS

FROM DR. C. C. MILLER.

OCTOBER 11, 12, 13.

A WRITER in *Bienen-Vater* quotes from GLEANINGS the account of bees changing worker eggs to drone eggs, and then slyly pokes fun at the idea.

PROPOLIS of a new kind appears in some of my hives this year. It sparkles to a slight extent like what the ladies call diamond dust. I wonder what it comes from.

THE RAKING MOTION of bees at the hive-front can hardly be a sign of swarming, as suggested by some one, for I saw it this year after all swarming was over, and didn't notice it before.

IN A NUMBER OF CASES I have found young queens wrong end to in their cells, but never a worker. Does this position always prove fatal to a queen, or has she the power to turn around in the cell?

CONTRARY to my expectations, and contrary, too, I think, to the reports of others, when my bees were kept a full week with the Langdon non-swarmer on, none of the worker brood suffered, so far as I could see.

"A RECORD OF 75 POUNDS of comb honey per colony, spring count, for eight consecutive years," is attributed to Hon. Geo. E. Hilton, in a biographical sketch in *A. B. J.* That makes some of us green with envy.

MORE AND MORE it begins to seem that, while the season was a grand one in some parts, in others it was one of the very worst. As yet I think no good reports come from west of the Mississippi; some reports that do come, say, "Not a section finished."

HENRY ALLEY says that young bees up to three days old will not molest a strange queen. If so, then instead of giving a valuable queen to hatching brood without any bees, it would be just as well to inclose this queenless brood three days before giving the queen.

D. C. LEACH reports an experiment in *A. B. J.* His bees were working on linden two miles away. At night he shut in one colony, opening them next morning when other colonies were fairly at work. In just 15 minutes the first bee returned, others being as long as 18 minutes.

DID YOU EVER NOTICE how suddenly bees lose interest in a robber the instant it is killed? One or more will be holding on to it for dear life; but the minute you kill it with the end of a chisel they lose all interest in it, and act as if they didn't see it. But a strange queen will hold their attention long after it is dead.

"SOMNAMBULIST" talks delightfully in his sleep, as reported in the really progressive *Progressive;* and that usually shrewd guesser, Hasty, paid me the compliment of laying Somnambulist's work at my door; but you're away off this time, brother Hasty. Look closer at the ear-marks.

"DON'T START OUT to invent the best hive on earth," says J. W. Rouse, in *P. B. K.*, "until you have become a judge of what is best, by practical experience." Oh, dear! if that advice is followed, it will strangle at the birth ninety-nine out of every hundred of all the new "best hives" that are invented.

PASTURAGE around the home apiary, so far as I can judge from outside appearances, is as good as or better than at the Wilson apiary. But for years the Wilson has taken the lead, the bees storing there when they have stopped at home. It shows that I don't know how to select a location as well as the bees.

THE ENLARGED SCOPE of the Bee-keepers' Union makes it seem desirable that it should have a yearly meeting. If some plan were devised by which every member of the North American Society could be made a member of the Union, the way for a yearly meeting of the Union would seem easier.

"THE EIGHT-FRAME HIVE has been a detriment rather than a help toward getting large crops," says R. C. Aikin, in *P. B. K.* He argues that the extra frames in the large hives have only to be filled with honey once, making things ever after in better shape. I'm afraid there's a good deal in what he says, and it's been troubling me for years.

SWEET CLOVER can hardly make the black honey credited to it by some. This year my bees have had more sweet clover than ever before—enough, I should think, to make a perceptible impression, and my honey was never finer. I had some of that sooty honey one year, and have no idea from what it came, but I've had none of it this year.

"I DO NOT BELIEVE a swarm works with any great degree of vigor above that of the same colony when it does not swarm, even though *prevented* from swarming. There is an *apparent* greater energy, for two reasons. First, the swarm has no brood—nothing to do but build comb. The second reason is, they get a lot of honey in a short time."—*R. C. Aikin, in P. B. K.*

THE *Apiculturist* wisely reprints an exceedingly interesting article from father Langstroth, in which he shows by experiment, that, under favorable circumstances, a queen may hatch in

from 15 days 2 hours to 16½ days from the egg, and a worker from 19 days 2 hours to 22 days 3 hours. Queen and worker larvæ may have their cells capped over in at least 7 days 15 hours after the eggs were laid.

Alberti cut off a branch of a pine-tree which was covered with tree-lice and honey-dew, cleaned this branch very carefully, so that no honey-dew or tree-lice were any more on the twig, and placed it in his room. The next morning the twig was *again covered* with small drops of honey-dew—a stubborn fact that honey-dew does not always consist of the excrements of the tree-lice.—*H. Reepen*, in *A. B. J.*

In the discussion as to prevention of burr and brace combs, it seems to me that hardly the merited attention has been given to the matter of the space between one top-bar and its next neighbor. If a quarter of an inch is the space left by the bees between two vertical surfaces, and if that is the proper distance between top-bar and section, will some good brother please rise and say whether there is any reason why ¼ inch is not the best distance between top-bars?

MORE ACCURATE OBSERVATIONS.

WHAT AND WHAT IS NOT SWARMING-FEVER; HOW IT MAY BE DISTINGUISHED FROM ORDINARY SWARMING; SOME VALUABLE DATA FROM E. E. HASTY.

There has been a little breeze, in which friends Doolittle and Alley participated, as to whether eight days or nine days after the prime swarm is the time to expect a second swarm. It strikes me that here is the place to put in an earnest plea for more accurate observations and real records. Most of us are trusting too much to general impressions and memory; and this sort of thing is not worthy of the high rank which apiculture is taking as a science as well as an art. Let us have the actual records of two or three apiaries where swarm-fever has prevailed, and also of two or three where the swarming is normal, and of as many more where swarming is scanty. Then we shall have something on the question to which we can, without blushing, invite the attention of scientific men. I can open the ball by contributing a record of the first sort mentioned. If the owners of large apiaries have all left off keeping records, will they not *next year* favor us with the actual dates of their second swarms?

Swarm-fever is a real something, which is sometimes present and sometimes not present at swarming-time. Many use the term as a mere expression for a troublesome amount of swarming when every thing is perfectly normal. A dozen colonies may send out their prime swarms the same forenoon, and make their keeper sweat considerably, when there is not a bit of swarm-fever in the yard. One of the plainest manifestations of swarm-fever is in causing the second swarms to come out *later than schedule time.* A novice would expect the opposite result—earlier time if the bees felt in a hurry. The explanation is, that the mania causes the first swarms to come out with less preparation than usual, or none at all. Then, as there must be a queen of some sort before the seconds can get away in condition to set up in housekeeping, there must be a longer period of waiting for the young queens to emerge.

I have for the present very swarmy year of 1893 the full records of 22 second swarms. Of course, if either the first or second swarm gets out without my seeing it, or without my seeing where it came from, the record is likely to be a blank so far as that hive is concerned. Also the cases of superseding queens at swarming-time put out the colonies in which they occur. These 22 second swarms were timed as follows:

At 8 days	5	At 12 days	2
At 9 days	2	At 13 days	2
At 10 days	5	At 14 days	1
At 11 days	4	At 17 days	1

The 17-day colony gave a third swarm at 19 days from the prime. On the previous day (the 18th) I examined the hive and found things as they should be during after-swarming. So it was not a case of the old queen returning and coming out with another swarm later. Once or twice before, I have had the last swarm 17 days from the prime. It seems to me that Mr. Alley's assertion, in his new serial, that, if no swarm comes out by the twelfth day, none need be expected, is misleading and bad, except as to locations where swarm-fever never prevails. Mr. Doolittle remarks that cutting queen-cells on the sixth day will result in swarms on the 16th, 17th, and 18th; but in the above case no cells were cut; and I should fear to trust Mr. D.'s sure plan (cutting on the 8th day), lest a considerable percentage should swarm anyhow, and leave the colonies queenless.

Another manifestation of swarm-fever is the great number of swarms that go back to their hives again. June 14th I had 8 swarms in succession come out and go back, and not a clipped queen in the yard. Fourteen of the 22 swarms in the table above went back; so one day should be added if the time when the second swarm is ready to be hived is wanted. A fifteenth one came out three times the same day, clustering the third time. A novice would suppose going back into the hive indicates attachment to it, and reluctance to go away. The fact seems to be, that a few hot-heads get so impatient to be away that they start a rush prematurely, before the queen is ready, or, at least, before all things are ready; and the result is a fiasco. Three of the five eight-day swarms clustered the first time. The fourteen-day swarm went back and came out the next day.

As to authorities on the question, Quinby says 8 or 9 days; Cook, 7 or 8 plus 2 or 3; *i. e.*, 9 to 11 days; King, 8 or 9 plus 1; *i. e.*, 9 or 10 days. Langstroth says usually 9, but on rare occasions as few as 3 or as many as 17. My A B C seems not to go on record on the point. The table of my this year's experience, as you see, makes the average time between 10 and 11 days. There being more than twice as many on the eighth day as on the ninth may be a slight indication that eight days is the true normal.

It is very well to have experiment stations and paid experimenters; but there is much work yet to be done which almost any intelligent and enthusiastic young student could do. For instance, bees have twenty different styles of swarming. Who will take eyes in his head, and watch and note-book in his hand, and describe each style accurately, as a scientific work would require? Occasionally a swarm comes out riding upon each other's shoulders, and hurls itself in ragged heaps upon the ground in front of the hive, sizzling and fuming. Perchance, after a long time spent thus, they get back on the front of the hive, and gradually cool down—like an overheated cook-stove slowly simmering itself into quiet. Occasionally a swarm comes out rather slowly, and half the bees quickly alight, scattered everywhere, on the leaves of vegetation, on surrounding hives, and on the ground, as if there were going to be a ball-game, and they

wanted to get into position to see. Thus they alternately fly and rest, keeping some show in the air all the time, until a regular cluster may develop somewhere later on. Occasionally each bee seems to come out almost as if shot from a pop-gun, and goes directly high up in the air; and, before the rear end of the swarm is out, the advance guard is gone, nobody knows where; and part of the company have to return for want of any thing else to do with themselves. Thus the swarm is like one of those great swift comets that almost touch the sun; a piece of the tail gets pulled off in passing. So many reliable apiarists find the fountain pump of some use in controlling swarms, while the same is absurdly useless with me, that I judge that the dense, just-like-a-picture style of swarming is common in some yards. Otherwise I should be tempted to say that bees never swarm that way. Who will collect all these facts, and get them salted down somewhere where they can be referred to?

Richards, O., August 5. E. E. HASTY.

[It seems to us, friend H., that you have pretty well salted down the facts. However, we shall be glad of more data from other sources, and from yourself whenever you are prepared to furnish them. To tell the truth, we had rather accepted the eight-day rule as being quite reliable; and even yet we are inclined to regard it as more reliable than any other day for us to cut out cells. If we were to cut them out before or after, we are not much better off. In the one case more cells may be started from larvæ not yet too old; and in the other case we may have swarms when the eighth day arrives. Can't you or somebody else straighten out these facts so that we may have a rule that will work a little better? Your last paragraph describes more minutely and more accurately all the phases of swarming with which we are acquainted than any thing we have before read.

Referring to the fountain pump, we may say that we are among the "reliable apiarists" who have found its use a decided advantage. Indeed, there have been times when we know we should have lost swarms without it; but as it was, we could drive them like a drove of sheep where we wanted them, and almost *make* them cluster on the identical spot desired; but, if we remember correctly, you have at your apiary a large amount of shrubbery — low bushes, high bushes, lots of posies, big and little, and trees large and small. There are so many convenient places on which a swarm may cluster that a fountain pump would be "absurdly useless." When A. I. R. planned the location for our present apiary here at the Home of the Honey-bees, he decided that there should not be a single tree inside of the evergreen inclosure. This is all very nice at swarming-time, but it is not so very pleasant during the very hot days of summer, for the apiarist. The big evergreens cut off the fine delicate breezes that are so pleasant, and leave the sun to pour down inside of the small square, as it were.]

THAT PADDLE, ETC.

DOOLITTLE ARGUES FOR ONE OF SOLID WOOD.

In Dr. Miller's "Stray Straws" for August 1st I find this: "Doolittle makes a paddle of peculiar construction with which to kill bees that persist in chasing and scolding. A very good substitute for this is a piece of heavy wire cloth. It will fetch the bee every whack, while the stick will miss nine times out of ten."

Now, I should like to ask Dr. M. if he has tried a stick and a piece of wire cloth, both of equal dimensions, and found out that the wire cloth was superior to the wooden piece. Soon after I gave the item of how I killed cross bees that persisted in following me about, and by so doing kept things so peaceable that visitors could walk about the bee-yard without danger of being stung, some one wrote me privately, or through one of the bee-papers, I do not remember which, that, if I would make a skeleton paddle, and cover each side with wire cloth, it would be superior to the wooden paddle, inasmuch as that the air would pass through the wire cloth so that the bee would be hit every time, while the wooden paddle tended to blow the bee out of the way of the stroke, thus making it difficult to hit the bee the first time. Thinking that this writer had struck the right thing, as it looked so reasonable, I made two or three of these wire-cloth and wood paddles, and, upon a thorough trial, I found that I could hit a bee just as often with the wooden one as with the other. To be sure, I could hear the air hiss, as the force of the blow drove it through the wire cloth; but when it came to hitting the bee, I could do so every time with either, unless it happened to dart out of the line of the blow just before the paddle got to it. But there was one thing I found that was in favor of the all-wood paddle that the wire cloth did not possess; and that was, that, every time I hit a bee with it, the bee was a dead bee; while with the wire cloth, fully one-half were only maimed, to die a lingering death, or to come back at me with redoubled fury. Now, of all the things which hurt me the most, it is to see any thing die by torture; and a bee maimed and hurt takes me many steps out of my road to finish killing it, while a dead one is thought no more of. In striking a bee with the wire cloth, if the bee's head or thorax goes between the wires or in the meshes, it is not killed; while with the wooden one the head and thorax are paralyzed at once. At least, this is my experience. Keeping down cross bees in this way saves lots of stings and annoyance, and I think it pays as well as any of the little things in the apiary.

DEAD BEES AT THE ENTRANCE WHEN INTRODUCING.

Another "Straw" which attracted my attention in the same number was this: "Dead bees to a considerable number are often seen in front of a hive to which a queen has been introduced, their curled-up position showing that they have been stung to death. I think that this is an indication that the queen will be received all right. The bees which make an attempt on the queen's life are stung to death."

To this I take exceptions; and were it not that Dr. M. says "I think," we should "lock horns" over the matter in a way that might not seem so funny to those fellows who are so anxious to say "seek" when it comes to Miller and Doolittle—not but that I have had queens accepted all right where a fight has occurred in a hive where a strange queen was being introduced, till a handful or more of bees were killed; but where I have had one accepted all right, I have had fully two queens either killed or hugged till they were good for but little, or worse than nothing, because they had been tortured till they could hold the place of a queen, but not fill it. Many a queen have I known, under such circumstances, to be kept in a ball of bees so long that they were shiny all over, the fine hairs being all scraped or gnawed off, and many times the wings were torn in shreds, with one or more of their legs stiffened, till they were useless. After keeping them in

this way for two or three days they would be allowed to have their liberty, and be fed and accepted as the mother of the colony, only to be a poor substitute for the same. This will I say: I never knew a queen to be so used unless there were from 100 to a pint of dead bees brought out at the entrance; while, when the queen is killed outright, there may be dead bees at the entrance and there may not. After years of careful watching and experimenting I feel like saying that any plan of introduction which allows the bees to have a quarrel over the queen while she is loose among them is faulty in the extreme, for not one queen in ten comes out of such a fight as good as she was before. This is why I recommend using a large wire-cloth cage to fasten the queen under on the combs; for with such a cage, should a fight result, it always does so before the queen is out among the bees, consequently she is unharmed. When bees, fairly hissing with rage, crowd tightly around a cage having a queen under it (in which case friend Root has so often told us it is not safe to let the queen out), they would ball the queen in the same way were she out of the cage; and if it is not safe to let her out when the cage is thus balled, it is certainly unsafe to have her loose among the bees at such times. After the bees cease to hover around the cage, the fight is over, and then the queen can safely go out among the bees. I have known as many as a pint of bees to be killed when a cage was thus covered, yet the queen would not be harmed at all; but let half that number of bees be killed when the queen is among the fighting bees, and she will be materially injured, if not spoiled entirely—at least, this is my experience after scores of experiments along this line.

Borodino, N. Y. G. M. Doolittle.

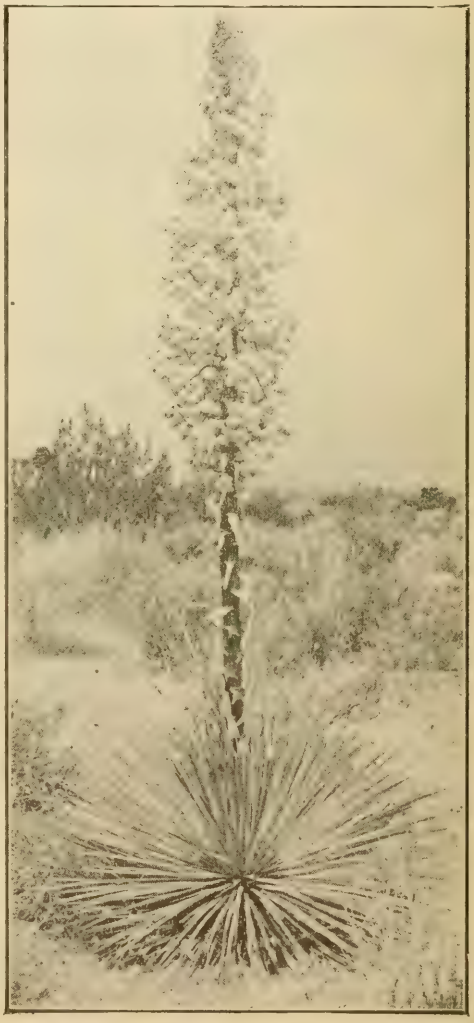
RAMBLE NO. 91.

MR. BRODBECK'S APIARY.

The location of Mr. Brodbeck's apiary, near the outlet of Cold Water Canyon, is especially adapted to the comfort of the apiarist. The large house is not only surrounded by a broad veranda, but the comfort is further enhanced by a wealth of shade. The tall sycamore and the blue-gum interlock their branches, while a tangle of small trees and blooming shrubs grows in profusion and lends a charm. The water from the dark recesses of the canyon above has to leap many rocks and boulders; and its subdued roar, like a distant waterfall, adds another charm to the place. An ample ditch conducts some of this water to the very edge of the veranda; and such cool and refreshing soft water as to give health with every draught.

A person living where rains are frequent, and springs of water abundant, will never appreciate the wonderful value of water until he has lived in a dry country; and the appreciation will be strengthened if he has lived several months where the precious fluid is a mile away; and where the only shade is that of a buckthorn bush, scarcely large enough for a jack-rabbit to waggle his ears under, water and shade will be appreciated as never before. Owing to this fact, the canyon is a popular resort and picnic-ground for the inhabitants of the plains below.

Mr. Brodbeck is now the happy owner of 83 good strong colonies of bees, and can no longer be called the little bee-man with one swarm. He is one of us, sure, in point of numbers. The bees were moved to this location too late to get the early honey-flow, and, as a consequence, his yield is not so great as that obtained by some of his neighbors; but, nevertheless, it makes a good showing. I found that Mr. B. was a very careful and painstaking workman among the bees and fixtures, and every thing about the apiary was kept in first-class order. The hives are all new L. hives; and, instead of piling unsightly stones on the covers to hold them on, the cleat on the ends of the cover shuts over the hive far enough for its lower



YUCCA-PLANT, OR SPANISH BAYONET.

edge to come even with the lower edge of the cleat on the hive. A button on the cover-cleat secures the cover firmly to the hive. The fine strain of Italians found in the hives are bred from an imported queen which came through the Home of the Honey-bees, and the nectar is extracted with a Cowan extractor from the same place. The honey-house is a temporary concern, like many others in California, and is covered with cotton cloth, and makes a very pretty appearance among the peach and apricot trees among which the hives are located.

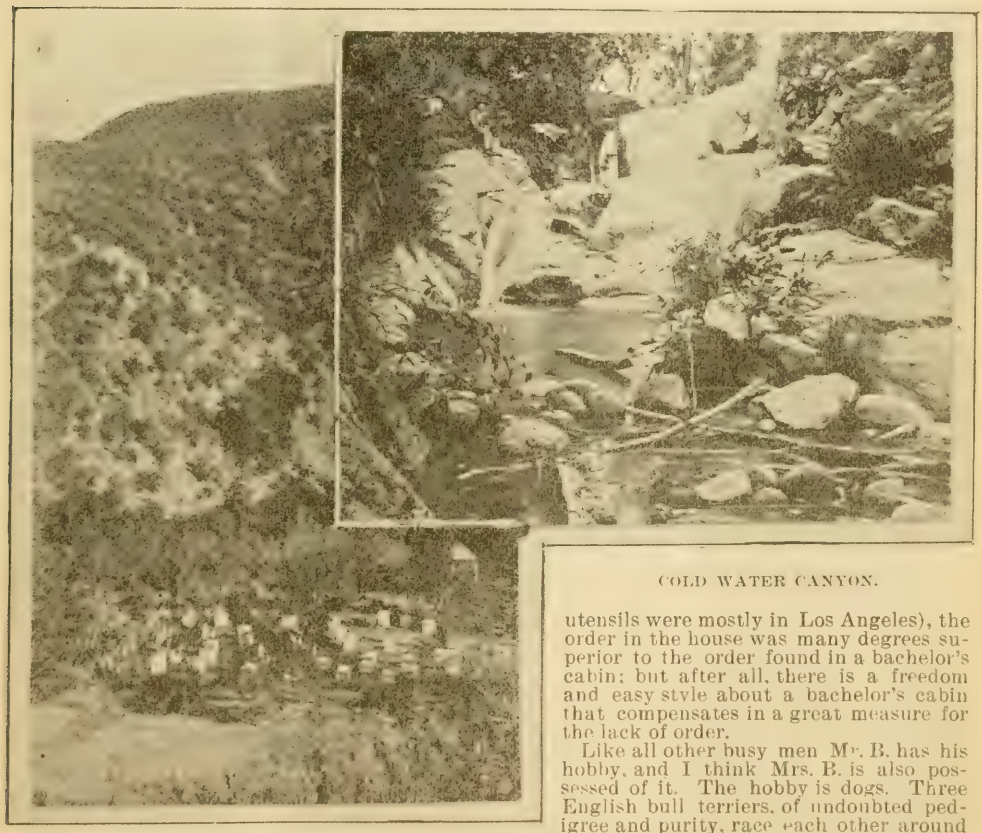
These temporary honey-houses are usually covered with burlaps, which are not very beautiful to look upon.

The honey-pasturage extends into the various little canyons, and is extensive, with white sage predominating. The young orange-groves on the plains below will soon add another bloom in abundance for the busy workers. The dried stems of the yucca, or Spanish bayonet, are seen in every direction on the mountain-sides. The blossoms of this unique plant put forth early in the season; are borne in profusion on great spikes, and are of short duration. The bees, however, work upon them for both pollen and honey; and, though it may not amount to much as a honey-plant, it is interesting to bee-keepers as the producer of the yucca brush for brushing bees from combs. The leaves at the base are long and lanceolate, and provided with a point as sharp as a needle; hence the term "Spanish bayonet." The brush is obtained from the base of the leaf and from the dead leaves that are on the stalk. There are several species of this yucca. On the desert they grow to quite sizable trees. I obtained a photo of a fine specimen of this plant in full bloom, and present it herewith to your readers.

The other honey-producing plants on this range are too numerous to mention, and are of the same class as those further down in the valley.

In his management of an apiary, Mr. B. has an eye constantly for improvements; and the intricate whys and wherefores are patiently studied. Among his improvements, he has constructed a new smoker, upon which he has secured a patent. The main features embodied in the smoker are an air-space all around the fire-barrel, and a peculiar and efficient arrangement of the blast-tube. Other improvements are to be made; and when the proper time comes the smoker will be put upon the market to compete with the other members of the smoker family.

Although Mr. B. is one of us so far as the bee keeping pursuit is concerned, he is not one of us in the bachelor line. A better half presides over his residence, his cook-stove, and his wardrobe, and keeps things in order; and, although Mrs. B. remarked that she felt as though they were camping (for their household utensils were mostly in Los Angeles), the order in the house was many degrees superior to the order found in a bachelor's cabin; but after all, there is a freedom and easy style about a bachelor's cabin that compensates in a great measure for the lack of order.



BRODBECK'S APIARY.

COLD WATER CANYON.

Like all other busy men Mr. B. has his hobby, and I think Mrs. B. is also possessed of it. The hobby is dogs. Three English bull terriers, of undoubted pedigree and purity, race each other around the ranch, and make things lively; and as three dogs require too much whistling to call them, and as Mrs. B. has the usual feminine weakness in the whistle line, Mr. B. has an instrument with a half-whistle and half-bugle tone that makes the welkin ring when blown upon; and every time its notes resound through the canyon the dogs really climb over each other to get to their master or mistress.

The house occupied by our friends was erected by a Dr. Smith; and, when not acting in his medical profession, he practiced spiritualism. He had a son, "Dave" by name, and report says that the son was ill treated to such an extent that he died of starvation; and even after he had passed to the spirit-land, Dave couldn't get over his feeling of resentment toward his parent, and he came back and

walked the earth on dark nights, and haunted the old doctor until he died and was laid away to rest on the hill above the house. Rumor went even further, and said that Dave liked the haunting business so well that he continued it until this day; and the old house has had the finger of scorn pointed at it by the passersby, and it is called the haunted house. Before I was informed of the fact, I saw a written scrawl on the side of the house, in these words:

"As you are now, so I have been;
As I am now, so you shall be.
Beware! Spirit of Dave Smith."

I was considering what that meant, when Mr. B. informed me that the house was haunted, and that I should have to sleep in the haunted chamber. I immediately wished myself back in my lonely cabin, where no spirits keep nightly vigils; but I thought that, if Mr. and Mrs. B. and the dogs could stand a haunted house I could, and I tried to be outwardly calm when I retired; but there was a terrible feeling about the roots of my hair. I have read a great many ghost-stories in my day; and just as soon as I had blown out the light and retired, I began to think about the ghostliest ghost-stories I could remember; and I almost imagined cold clammy hands grasping my feet, and I involuntarily drew my feet further up in bed; grinning skeletons and rattling bones were evidently lurking behind the veil of darkness, and I was almost in an agony of terror, when—hark! what is that? I removed the sheet from over my head, and listened. There were several boxes in the room, and in one of them there was a loud rap, and in a moment it was repeated. I was somewhat relieved to think that Dave wanted to talk with me by rapping instead of a ghostly presence, and so I commenced the old way of repeating the alphabet, for him to spell out his message; from a to g, then a rap; a to o. and another rap; a to s, another; a to h. another—*gosh!* and I couldn't get another word. I repeated the alphabet fore and aft. Then I fell to considering what Dave wanted to use that slang word for, just as though he had stepped on a tack or had been stung by a bee. I considered it so thoroughly that I fell asleep, and was disturbed only by now and then a ghostly dream until Mr. B. blew his bugle for his dogs, in the morning. I said not a word to Mr. B. about my diversions in the haunted chamber; but a few days after I confided Dave's only expression to a friend, when he burst into laughing, and said, "Why! don't you see Dave appeared in the spirit? and as soon as he understood that the Rambler was going to interview him he hastily said 'gosh' and departed." Then my friend laughed again. "No," said he, "Dave will never appear again in Cold Water Canyon. No more will that house be haunted."

I did not deem fit to join in my friend's hilarity, and soon changed the subject of conversation. I am, however, fully persuaded that, if I had allowed myself to think of ghosts and ghost stories, I should have seen one before morning; and a couplet on witches, often repeated by my grandfather, came to mind:

Where they do believe, there witches are;
Where they do not believe, there is none there.

This holds true in relation to modern ghosts and haunted houses.

Mr. Brodbeck again saw me safely to the train, and for the first outing after a very busy season it was duly enjoyed by the

Rambler.

We are well pleased with Gleanings, and feel that we could not afford to do without it.
Hiawatha, Kan., July 15. M. A. Butts.

THOSE OLD BEE-BOOKS.

ANOTHER PEEP AT THE "GOOD OLD TIMES."

In 1766, Mr. John Mills, a member of the Royal Society of England, published a book entitled "An Essay on the Management of Bees." It was printed in Paternoster Row, London. Paternoster Row is a comparatively small street running nearly east and west parallel with the north side of St. Paul's Churchyard—the latter taking its name from the immense cathedral there, named after St. Paul. It is the largest Protestant church in the world, and, as I have before suggested, it is a great literary as well as religious center. It forms, in this respect, a complete contrast to St. Peter's, in Rome, whose surroundings are familiar to all who read the concurrent testimony of those who visit Rome. The erection of such mammoth church edifices is always an indication of a low state of spirituality bordering on heathenism; and although we may be glad that there are so many of them standing in Europe, let us hope that this age is satisfied to build more and cheaper churches.

Mr. Mills wrote this little book of 157 pages at the request of the Society for the Encouragement of Arts, Manufactures, and Commerce, in order to show bee-keepers a better way of managing their bees than to kill them with brimstone. Although Huber was then 16 years old, of course his investigations were not yet made, his "Observations" first appearing about 1796; but I believe it was about this time that he had his first premonitory symptoms of what afterward proved to be the worst of misfortunes—blindness. The inducement offered by said society was as follows:

The society will pay a sum, not exceeding two hundred pounds, for collecting wax and preserving the lives of the bees, in the following proportion: To every person who shall collect from stocks of bees, his own property, within the year 1767, ten pounds of clear merchantable wax, without destroying the bees, leaving a sufficient quantity of honey for their sustenance, five pounds.

The apparatus used was exhibited in the Strand; "and," the writer adds, "at Mr. Thorley's, opposite the Mansion House." This Mr. Thorley was the man whose book I noticed in the previous issue, and this reference shows the esteem in which he was held in London.

In regard to the location of an apiary, he quotes from Columella as follows:

The apiary should face the south, in a place neither too hot nor too much exposed to the cold. It should be in a valley, in order that the loaded bees may with the greater ease descend to their homes. It should be near the dwelling-house, on account of the convenience in watching them, but so situated as not to be exposed to noisome smells, nor to the din of men or cattle. It should be surrounded by a wall, which, however, should not exceed three feet high. If possible a running stream should be near them; or, if that can not be, then water should be brought near them in troughs, with pebbles or little stones in the water for the bees to rest on while they drink; or the water should be confined within gently declining banks, in order that the bees may have safe access to it—they not being able to produce either combs, honey, or food for their larvæ, without water.

He also recommends about such an apiary as Ernest says Mr. Hasty has, in respect to trees and bushes. (See Mr. Hasty's letter in this number.) That description of an apiary is poetical from beginning to end; and yet from a practical standpoint what could be better?

Among the sources of honey, he advises (following Columella) thyme, oak, pine, cedar, and all fruit-trees. He is enthusiastic over broom as a honey-plant. I am not sure that he means broom-corn, and yet I know from my experience in cutting it that parts of it are at times very

sweet. Yes, right here he speaks of two kinds of broom—the common and the Spanish. Quoting from Mr. Bradley, whom I mentioned before as a celebrated gardener who lived a century before Mr. Mills did, "An acre of Spanish broom will afford honey and wax enough for ten good stocks of bees." He speaks of flowers as "making wax," but perhaps he means in the sense that clover makes butter.

Concerning the removal of bees to new locations to get the honey, Mr. Mills says, on the authority of Pliny, the celebrated Roman writer who lost his life in the pursuit of science, at the time Mount Vesuvius covered the cities of Herculaneum and Pompeii, Aug. 24, A.D. 79:

As soon as the spring food for bees has failed in the valleys near our towns, the hives of bees are put into boats, and carried up against the stream of the river, in the night, in search of better pasture. The bees go out in the morning, in quest of provisions, and return regularly to their hives in the boats, with the stores they have collected. This method is continued till the sinking of the boats to a certain depth in the water shows that the hives are sufficiently full; and they are then carried back to their former homes, where the honey is taken out.

In speaking of Egypt the same thing is repeated in substance. Those who have GLEANINGS for 1889 will find, on page 83, another account which I translated from a German journal; also a good picture. The original of this German account is here found in Mr. Mills' book, so I find that I did considerable of this work over four years ago. He speaks in detail of how bees in France were prepared for moving. He considers the whole plan as very advantageous under some circumstances. There is no need of telling here how the Greeks and Romans, even before our era, took honey and yet saved the bees; but here is a passage relative to the famous honey of Mount Hymettus, from the travels of a Mr. Wheeler, in Greece:

Mount Hymettus is celebrated for the best honey in all Greece. We ate of it very freely, finding it to be very good, and were not at all incommoded with any gripings after it. This mountain was not less famous in times past for bees and admirable honey, the ancients believing that bees were first bred here, and that all other bees were but colonies from this mountain; which, if so, we assured ourselves that it must be from this part of the mountain that the colonies were sent—both because the honey here made is the best, and that here they never destroy the bees. It is of a good consistence, of a fair gold color, and the quantity sweetens more water than the like quantity of any other doth. The natives wondered at my comrade, in that he preferred the white honey of France, telling him that white honey is raw, and not rightly concocted either by nature or the bees.

Mr. Mills says that, where aromatic flowers abound, much honey can be gathered, as sheep will not eat such. He quotes from one writer who refers to the prodigious number of bees in Spain as being entirely attributable to the fact that that country abounds in aromatic flowers, which sheep will not touch. His author says, "I am almost ashamed to give, under my hand, that I knew a parish priest [in Spain] who had 5000 hives." Good! I've long wanted something that would take the starch out of those California folks. But Spain to-day shows no such resources in honey as that would seem to indicate. But it may be well to remark here, that Spain has probably more natural resources than any other portion of the globe of its size, even if it is at present a little run down at the heel.

This book is, as a whole, very interesting, and shows great progress in England between 1744 and 1766. The author says that the anatomy of a queen shows that she lays many thousand eggs, and that these are impregnated by the drones; her ovary may contain 5000 eggs at once, and she may produce 12,000 bees in two months. Dissection shows the sex of the drone, and observations "have assured us that they couple with the queen." This is one of the few books I wish were longer. W. P. R.

Medina, Aug. 24.

GONE BACK TO THE DOOLITTLE CELL-CUP.

DO DARK BEES REAR DARK QUEENS? A BRIGHT BREEZY LETTER FROM S. F. TREGO.

I see, on p. 600, that Mr. W. J. Ellison believes that dark bees rear dark queens, no matter what kind of brood is used for queen-rearing. Now, I can not believe it. I have been very short of queens this season, consequently my big cell-building colonies had black queens; but over half of my young queens are solid yellow, and the rest come very near it. I sent you to-day the darkest queen I have had hatch this year. She is a virgin, hatched Aug. 5, and is also rather small. If she is of any use to you, all right; and if not, kill her.

Since writing about my method of getting cells, I have gone back to the Doolittle method (or nearly so). You see, I am a changeable sort of fellow, and do not believe in sticking to my pet hobbies when there is something better.

In reading the article on p. 528, Mr. Jas. S. Klack, a queen-breeder of Urban, Pa., wrote to me and asked me to try again. He gave careful directions how to do it just right, but there was none of it new to me. I concluded to try again, so I got a lot of cups that had been in the hives some time, and were trimmed down just as the bees wanted them.

I have forgotten how many there were, but I think it was about 70. I fixed them carefully, and put them into a big colony that had been made queenless and broodless a few days before, and they accepted about 75 or 80 per cent of them. Next day I distributed them among my cell-builders, and they accepted and finished most of them. Since that I have kept those bees at work on the cell-cups, and they never destroy over a quarter of them, and sometimes accept nearly all. In the last lot, 23 were accepted out of 25. I leave them in this hive only 30 to 40 hours, as they can not care for so many properly. I have a batch in their hives now, and shall stop right here and go and see how many are accepted.

Later.—Well, who can beat this? They have accepted 60 out of 62! I think a good deal depends on the colony. Some will build lots of cells, and others are no good at all. I intended to buy the queen of that colony back, even if she cost me $5.00 (she was a $1.50 queen); but before I got around to it, I got a letter stating she was lost in introducing.

Mrs. Atchley wrote me about Willie's cell-cups some time ago; but I have not tried it yet.

By the way, did you ever see rivals in any business who are as friendly as queen-breeders? Last week I got five cards and two letters from as many queen-breeders, and all began "Friend Trego," except one, and that began "Dear Friend."

TREGO'S EXPERIENCE WITH THE "WHEEL."

I see A. I. has almost gone wild on the "wheel." Well, I know from experience that the "wheel" is a great promoter of health. A few days ago I "wheeled" about five barrels of water and put it on 14 hills of cucumbers, and you would have to look a good while to find any thing healthier than they are now, right in this dry hot weather; but I did not use a "Safety." It was an ordinary railroad wheelbarrow; and the ease with which I could carry 15 gallons of water would surprise you.

Put me in "Blasted Hopes," so far as honey is concerned. There was a light flow of black honey-dew all through June, and then for two weeks in July basswood did extra well; but there are not many trees here, so the bees will have only about enough to carry them to the fall flow, which we consider a "dead-sure thing" here. White clover was an entire failure.

Swedona, Ill. S. F. Trego.

[When friend Ellison and one or two others suggested that dark bees rear dark queens, we doubted it very much. We never saw any thing in our queen-rearing operations that led us to believe that such could be the case. Many and many a time have we reared beautiful yellow queens from dark hybrids or black bees. The queen referred to was light-colored, and we have introduced her.

We are glad you are having success with the Doolittle cell-cups; and it shows that one is progressive, to be just changeable enough to throw aside old pet hobbies when there is something better. You know we have recently been accused of "flopping" from one thing to another; but we believe that, whenever it is to the interest of the fraternity at large to do so, we should do it.]

QUEENS FIGHTING.

SIMMINS' METHOD NOT A SUCCESS, ETC.

Mr. Root:—I read an inquiry in Stray Straws, "Who has ever seen laying queens show fight? and, having seen them fight, will they relate how it came about?"

Seven or eight years ago, in replacing some black queens with Italians, the idea sprang up that two queens might be mailed in one cage without a partition, if they would not fight. To test the matter, two were placed on a table, with a goblet inverted over them. They ran about trying to get out, not appearing to notice one another's presence for three or four minutes; but finally, about the time I commenced to think they would not fight, they clinched, hugged, and grappled with one another; parted, and came together again. They scratched so it could be easily heard, showing their sting, but neither one used it. The queens were then liberated, I believing they would wear one another out, even if they were dehorned or destinged; also, having more assurance that what our bee-books tell us is tried before putting them before the public.

Having introduced queens successfully by the Simmins fasting method, I wish to say that it was not satisfactory, though a success. Queens were removed from three colonies, and queens given them about one day later. They were introduced at dusk, after having had no food for about 40 minutes. They ran down at the top of the frames (young, vigorous laying queens), not disturbed for three days, when, on examination, queen-cells were plentiful in all. "Just what I expected," thought I; "so much for expecting they would be received." So other queens were placed upon the comb, caged in a Peet cage, and kept there for about two days, when they were examined, with the intention of releasing the caged queens; but in doing so the former queen was seen near the cage. She looked like a virgin queen, and no eggs nor larvæ were found, but plenty of capped queen-cells. The two other colonies were found also, with their queens first given, and they looked as though bees did not regard them as queens at all—no eggs, etc.—just like those first described. The caged queens were then removed from all colonies, and queen-cells destroyed. After a few days the queens began laying. If my memory is correct it was about ten days after they were introduced before they began laying, hence I never tried that method again.

Wishing to ascertain, if possible, why virgin queens over four or five days old are generally lost, one was placed in a wire cage with one end open. She was taken to a queenless nucleus, and the open end was placed over two worker-bees that were sucking honey from the comb. The sprightly virgin queen, without a moment's warning, pounced upon one of the workers and stung it quicker than it can be told. The worker acted as though stung by a worker, and soon died. So in introducing virgins the best time is when they are less than 24 hours old, as they are then looking out for themselves; and I believe the queen is often the cause of bees balling and killing her, especially when she is laying only a few eggs, as none is more easily introduced than one laying vigorously, which can be given to nearly any colony, without fear of loss. J. N. Colwick.

Norse, Texas, July 3, 1893.

VERMONT BEE-KEEPERS' ASSOCIATION.

ITS THIRD ANNUAL SPRING REUNION.

In the early days of the Vermont Bee-keepers' Association two meetings were held—one in the late fall or early winter, the other in the spring. As the association expanded from a local county organization to the dignified State organization of to-day, the semi-annual gatherings were merged into an annual.

Three years ago, V. V. Blackmer, of Orwell, then president of the association, conceived the idea of partially renewing the semi-annual feature in a modified form, and this was done by an informal gathering at his home late in May. Those who attended this reunion were anxious for the next spring to come, and were again royally entertained by President Blackmer.

One of the pledges required of our president, W. G. Larrabee, at the time of his election last winter, was "to have a reunion in the spring." Nothing daunted by the undertaking, he planned for and successfully carried out his part. Those who were so fortunate as to be present at this reunion will, I am sure, all unite in a hearty vote of thanks to President Larrabee and his parents for the day's entertainment had on the 19th of May, 1893; and now it is with great pleasure that I am permitted to introduce to the readers of Gleanings some of the members of the Vermont Bee-keepers' Association, as they sat and stood in front of the home apiary of W. G. Larrabee, at Larrabee's Point.

The first gentleman at the left of the picture is R. H. Holmes, of Shoreham, one of the oldest members of the association, as a member, and chiefly noted at home and in market for the excellence of his honey. The gentleman next in order is H. H. Burge, of Shoreham, a new member, but one who has made bee-keeping profitable. Then comes Miss Marcia A. Douglas, who believes that a lady is not entirely "sweet," regardless of the quantity of bees and honey, except she wears a becoming bonnet or hat. The tall lady back of Miss D. is Mrs. V. N. Forbes; at her left we recognize the pleasant features of Mrs. Larrabee, mother of John H. and W. G., while in front is Mrs. Blackmer, and at her left sits Miss Larrabee, apparently watching the kitten in Mrs. Steadman's lap. Between the two young ladies we find Mrs. Steadman, back of whom sits the writer, apparently gazing into the far distant. At his back stands Mrs. H. H. Bascom, of Or-

VERMONT BEE-KEEPERS' ASSOCIATION, HELD AT THE RESIDENCE OF V. V. BLACKMER, ORWELL, VT., MAY, 1893.

well. Mrs. R. H. Holmes is at her left, with Mrs. E. J. Smith sitting in front. At Mrs. Holmes' left stands Allen Plue, who is assisting Pres. Larrabee, who sits in the foreground just in front of Mr. V. N. Forbes, of West Haven, present member of the Vermont Legislature from his town. At his left stands Mr. P. B. Wolcott and mother, and in front sit Mr. E. J. Smith and Mrs. H. H. Burge. In the rear are the bee-hives and the honey-house and shop combined. The entire apiary is not shown; but in this glimpse of a Vermont apiary and members of the Vermont B. K. A., much more can be learned from the picture than from a long article. H. W. Scott.

Barre, Vt., July 17.

CALIFORNIA.

W. A. PRYAL'S IMPRESSIONS OF THE WORLD'S FAIR, HONEY EXHIBITS, ETC.

Editor Gleanings:—I have just finished reading several interesting articles in your journal. Those that took my fancy the most were the account of the World's Fair by Dr. Miller and Mr. Martin's California ramble. I was interested in the former, because I had "done" the big fair myself, and knew what the doctor was talking about. I had even seen it up to a later period than the genial correspondent of Gleanings had covered. The "sage" part of Mr. Martin's was interesting to me, because I had made a study of the famed California honey sage, and had, in fact, had the drawings of the plant and flower that figures in the A B C of Bee Culture made from a plant that grew in front of my apiary here. That was just ten years ago. The plants grow more robust here than they do in their native wilds in the southern counties, which may account for the slight difference in the shape of the flower. I am glad that so good a critic as the Rambler finds no fault with the flower and plant as engraved.

As Dr. Miller has stated a good deal about the fair, at least about the honey exhibit, I shall not go into any description of it. I visited the honey department in the Agricultural Building several times. There was an interval of over two weeks between my first and last visits. The first time I went there was in company with the able and gentlemanly editor of the *American Bee Journal*, Mr. G. W. York.

It was on the occasion of my first trip to the sweetest corner of the Agricultural Building that I met a couple of the prominent apiarists of America. It is true, there were not many of them present; but those of whom I had the pleasure of making an acquaintance were men who are the peers of any men in the calling in this land. As Dr. Miller has referred to the exhibits they have in charge, it will be unnecessary for me to repeat any thing more about them than to give their names. These gentlemen were Mr. E. Whitcomb, of Nebraska, and Mr. Allen Pringle. There was one other personage who, I believe, is an apiarist of no mean degree, and that was Miss Pringle. This young lady was assisting her father with the Ontario exhibit. It is needless to say that much of the attractiveness of that province's display is due to the exquisite taste and the deft fingers of Apiarist Pringle's charming daughter.

Aside from one or two of the honey exhibits, I was not greatly impressed with the way in which they were cooped up in those long showcases. It seemed to me that something better for the purpose might have been devised. I was also surprised that so few States were making exhibits. I should have been surprised at seeing my own State unrepresented, but for the fact that I knew, some months before I went to the fair, that we were not going to make any showing, for the good reason that our World's Fair Commissioners refused to allow the California bee-keepers any money or other aid in getting up an exhibit. They were given $300,000 by the State legislature, and this they used for purposes that were not altogether for the best interests of the State. Still, in some other lines they have made a good showing for the Golden State. They did not have even an exhibit of our wool. We excel in bees and wool, though both don't go well together in this State.

A visitor to the fair would think that we were the biggest part of the fair, from the many natural products we are showing; but if he were to see some of the good things that we are not showing he could not help believe that we are the greatest portion of the earth. You know a Californian does not think of asking for the earth, as some people elsewhere do, for the reason that we already have the best part of the globe. We are satisfied; why should we want more? Even with me, a Californian who had never been out of the State before, there is no inducement that would make me give a small slice of California for a whole division of the eastern country with a fence around it. I went east to see the *East*, and I saw the greater part of it as far as New York "town," and as far south as old Virginia. There was one place I wanted to call at, and that was the Home of the Honey-bees. As I had only one day remaining in which to go from Washington to Chicago, I could not remain over without losing my ticket. If I ever pass through Ohio, as I did on the 9th of this month, I shall surely try to make it convenient to drop around to see the establishment of the Messrs. Root.

W. A. Pryal.

North Temescal, Cal., June 30.

BALDENSPERGER'S LETTER.

SOMETHING ABOUT THE WRITER'S FAMILY.

The citadel of Solomon, referred to in my previous letter, is an oblong inclosure for cavalry, having one heavy iron door. Rooms and stables were built all around inside, against the walls. My father lived near there 45 years ago, when he was sent out as a missionary; but he soon gave up, continuing to work among the people in another way than by the prescriptions given. He was about a year or so following agriculture and apiculture in what was then the primitive way. I send you a picture, but it will be too dim for you to reproduce.* It represents one of father's apiaries as it existed and still exists. There is a large arch built in the court of the citadel. It is made of heavy masonry, to protect the bees from sunshine and rain. The jars containing the bees are piled one on the other, and an entrance behind permits the apiarist to operate with his bees without disturbing them in their flight. My father has been out there among the Bedouins in a time when civil war cut up Palestine into a vast military camp. He went about his business, and was never touched by any of the robbing and murdering bands of the vicinity. When the picture was taken he was sitting on a large stone near the top of the arch, while the bees were flying below.

*As suggested above, the photographs are altogether too dim to admit of a reproduction here. We regret this very much, as they greatly help the description, some of which we have been obliged to omit on that account.—Ed.

In 1849 he was asked to take place, temporarily, as steward in Bishop Gobat's orphanage on Mount Zion, until the right man could be found, and only under such conditions. He left the desert of Judea, where he lived in peace with every man; and, having married a young Alsatian, who came out to Jerusalem to join him, they occupied the place. The bishop died ten years ago. The orphanage passed into the hands of the Church Missionary Society, and both of my parents are still waiting the arrival of the "right man" to occupy the place held by them temporarily for the past 44 years.

I send also a picture of the orphanage on Mount Zion. Near by may be seen the walls of Jerusalem. In the center is the Tower of David, held by Mohammedans. In the same building is also shown to visitors the room in which Christ and his disciples had the last supper, on the evening before the crucifixion. Beside the schoolhouse is the Pretestant cemetery. Behind the cemetery is a Russian tower on top of Mount Olives, several miles away from Mount Zion. Near the center of the orphanage is a small arch in which bees were kept for 30 years in the earthenware jars till friends Jones and Benton taught us better ways in 1880, and took the first Holy-Lands introduced to Europe and America from this spot.

The rain water gathered in Solomon's pool, below the aboved-named citadel, originally flowed to Jerusalem along the mountain-sides for about 12 miles, and was designed for the ablutions of the faithful in the temple court. The aqueduct passes below the orphanage, and goes around Zion to Mount Moriah, where now only Mohammedans enter freely, and have use of the water when there is any. Christians are admitted only by paying a fee, and under the protection of the consular agent of their respective countries. Jews are not admitted at all, under any circumstances. In fact, it is only since the Crimean War that Christians have been admitted, in compliance with a treaty of peace between England, France, and Turkey. Any attempt before that period to enter disguised was severely punished, and in many cases the transgressor was brutally murdered by the mob. Although the sultan allowed some distinguished persons to enter, the sly mufti interpreted it thus: "You have permission to enter, but none to go out," whereupon the parties declined. The first person who entered the Holy of Holies was the king of Belgium, soon after the Crimean War. Since then almost every visitor to Jerusalem has been admitted. PH. J. BALDENSPERGER.

Nice, France.

THE EIGHT-DAY RULE FOR SWARMS.

THE EFFECT OF THE PRESENCE OF THE QUEEN ON THE SIZE OF THE CELL.

I think I see the twinkle in Doolittle's eye as he caught me up on that "straw" about cutting queen cells. He knows very well, that, whatever may be the proportions of swarms of one kind and another, when we talk about prevention of swarming, if the expression is not modified in any way, prevention of *first* swarms is always meant. And I don't know of any problem that has been more steadily growing in interest than that same one to prevent *all* swarming. And if we can prevent all first swarms, we need worry little about after-swarms. And let me say right here, that, if my "straw" was the means of bringing out Doolittle to give the rule for cutting out cells 8 days after the first swarm, or, better still, after hearing piping, then it was a good thing.

But, just for the sake of paying him back, I'm going to say that his rule can not be relied on in all cases; for too often a cell will be missed. A cell may be curled up between the comb and bottom-bar in such a way that even the experienced eyes of Doolittle would miss it. Still, these cases will be few with sufficient care.

One thing I do not remember seeing mentioned. It is, that you are five times as likely to succeed in cutting out all cells if they are started with a queen present as you are if they are started after a queen is taken away or caged; for with a queen present I think queen-cells are always started with a cup larger than a worker-cell and from the egg. If the queen is absent or caged, then grubs in worker-cells are chosen; and when these are completed they are often very insignificant-looking and hard to find. Sometimes they are hidden in corners, and sometimes they are on the middle of a comb, right among sealed worker brood, the only thing to show them being that the queen-cell is a little larger than the worker cells around it, but scarcely projecting any more above the surface. And yet such cells may produce large queens, for aught I know as good as any. Still, I must confess a preference for a cell that looks like a big peanut.

SHALL WE TRY TO PREVENT PRIME SWARMS?

With some little trepidation I attack that last sentence of brother Doolittle which suggests that cutting out queen-cells before swarming may result in a loss of honey. In the main it may be true, and I am not sure that I shall ever cut another queen-cell to prevent swarming; but the statement seems to draw in its wake a sort of belief that it is best in general to let bees take their own course with regard to swarming; in other words, that we should entirely give up the problem of prevention of swarming—that problem in which such a keen interest has been awakened.

I have no doubt that there are cases and places in which more honey can be obtained from a colony and its swarm than from the colony alone without any swarming. But for a great many of us, where swarming comes right in our harvest, with little or no prospect of any after-yield, the colonies that never take it into their head to swarm, other things being equal, are the ones upon which we can rely for best work.

Besides, we are not merely to count which will give us most honey—a colony with or without swarms. That may do for those who keep bees for the pleasure of it. I have no quarrel with the man who takes more pride and pleasure in getting 500 pounds from one colony than in getting 1000 from ten colonies. He is working for the pleasure of it, and he has his reward; but for those of us who swap our honey for bread and butter, the case is different. I am not so much interested in the amount I can get per colony as I am in the total crop. An average of 20 pounds per colony will suit me better than 100, providing that the plan that gives 20 pounds per colony will allow me so much less labor per colony that I can have a greater total crop.

Just here I stopped and looked up my assistant and said to her, "Emma, what proportion of our work, in your opinion, after the bees are out of the cellar, is given to the prevention or management of swarming?"

She looked thoughtful for a minute, and then with a little laugh said, "'Most all of it."

"That's putting it pretty strong," said I; and yet I'm not so sure that it's far out of the way. Given a strong colony of such a breed that I know it will have no thought of swarming, and

the labor of putting on and taking off sections will be very light. If I had such a breed, and it would give an average of 40 pounds per colony, I think I could do better than to have a swarming breed that would give 100 pounds per colony. The case would be different if I were limited to a certain number of colonies; but with most of us it is a limit of time and labor rather than a limit of numbers. So I say, give me the non-swarming kind, with a small average, rather than the swarmers with a big average. You see, the labor that would take care of 100 colonies of the swarming kind, with an average of 100 pounds, would easily care for 300 of the non-swarmers with their average of 40 pounds. The former would give me a total crop of 10,000; the latter, 12,000. The first might give me a bigger name, but the second would put more money into my pocket.

At this point I think I hear brother Doolittle saying, "Yes, but all your tinkering to prevent swarming and interfere with nature's plans are, in the main, failures, and involve just as much work as to let the bees have their own way." I hang my head at this, but rally after a minute, and say, "But all things in the line of real progress come about generally through a series of efforts and failures, and you mustn't try to discourage us, brother D., while we're trying to work 'along that line.'" In "A Year among the Bees" I said, "The problem which I am most anxious to solve is, how to manage to have no swarms, and still allow the queen to remain laying in the hive all the time. It may never be solved; but it is worth some dreaming over." I am of much the same mind still, only with more hopefulness that the dream will become a reality. With so many all working on the same problem, sooner or later I look for a favorable solution. Very sensibly, bee-keepers are giving up talking so much about a big yield per colony, and are bending their energies toward finding how to get the biggest yield per man. Some day we'll get there—at least, I hope so. C. C. Miller.

Marengo, Ill.

DOCTORING WITHOUT MEDICINE.

ANOTHER CHAPTER.

We clip the following from the *Mayflower*. You may laugh when you read it, but I believe it is true, and I believe the dirt-pile would not only be cheaper than doctors' stuff, but ever so much more efficacious with every baby the world round. Now read it.

BABY AND THE DIRT-PILE.

She was puny from her birth. For the first sixteen months she required care night and day. It was the young mother's first baby, and how she longed for a well, happy child! An old great-aunt visited her, who had seen ten boys and girls grow up. "What shall I do with her?" said baby's mother. "Try the dirt cure," said great aunt. "But she'll soil her frock, and get herself all dirt." "So she will, dear heart, but it may save her life." A blanket was spread on the ground, and the baby, that could just sit alone, was put on it. She seemed to like it right away, and in a few days could work herself to the edge and take up the soft dirt in her fingers. But what a looking child after an hour or two's play! She was possessed to throw the dirt into her hair, down her dress, and get her shoes and stockings full. But mamma was happy to see the little one hungry when brought into the house, and glad to drink her milk. After a warm bath she slept soundly, and this she had never done. It was wonderful how the child picked up, and what "dirt cure" did for her. As years went on, her mother bought a set of light garden-tools and encouraged her to have a garden. If from any cause she stayed in the house for several days a severe cold and sickness was the result. So she became an outdoor enthusiast. Even when sewing or reading she had her chair on the shady porch. One day I saw the child setting out plants in the rain. "Won't you take cold?" said I. "No," said she, "I shall rub off and put on dry clothes when I go in, and it is delightful to be outdoors when the air is so moist."

Sister Gracious, Mich.

That winding-up part about setting plants out in the rain is just exactly according to my experience. Being out in the rain never hurts me a particle; but, on the contrary, it does me good, providing I do not get the least bit chilly.

ANSWERS TO QUESTIONS

FROM BEGINNERS.

H. D. P., of Kansas, inquires whether, if he begins with the pure Italians, they will be likely to remain pure. *Ans.*—They can be kept pure by using perforated zinc, and destroying the impure drones in the neighborhood. See "Drones," in the A B C book.

T. B. S., of Arizona, wants to know where the royal jelly comes from for grafting queen-cells after swarming-time. *Ans.*—Usually there will be enough cells from the queenless colonies in the various parts of the apiary, containing royal jelly with which to supply grafted cells.

G. A. M., of Ohio, wants to know whether bees can be successfully transferred by the Heddon short way, at this season of the year. *Ans.*—They can. In fact, now is a very good time to do it. Any time is good to transfer when the bees are *not* working heavily in the fields, though perhaps the best time in the year is in the spring.

T. D., of Michigan, asks whether the bees would not destroy the queen on the Langdon non-swarming plan. *Ans.*—Although we have not tested the plan ourselves, if we are correct the bees do not kill the queen. The trouble seems to be, at present, that the bees are apt to die from suffocation; and that the plan, instead of preventing, actually encourages swarming in some cases.

W. H. S., of New Jersey, has a lot of second swarms, all of them weak, and he wants to know what to do with them. *Ans.*—We would first see that each has a laying queen; and then by stimulative feeding we would cause them to rear as much brood as possible, so as to be of good strength for winter. If so many colonies are not desired, unite them, as given under the head of "Uniting," in the A B C of Bee Culture, which you say you have.

M. M. B., of Pennsylvania, has some 25 lbs. of last year's foundation. He says it is too old and brittle, and wishes to know if there is any practical way of restoring it to its original condition, or a condition soft enough so as to be used over again. *Ans.*—Some one recommended, some time ago, putting such foundation into a warm tepid bath for a while, and claimed that it would make it so the bees would take to it as readily as any foundation. We have never tried it, and can not speak positively as to whether it would work or not.

A. B. S., of Ohio, wants to know if there is any law to protect bees from being trapped and scalded, or poisoned. *Ans.*—A case of this kind came up some time ago; and, if we remember correctly, the destroyer of the bees was compelled to pay damages. A good deal hinges on the point as to whether the bees in the first place were trespassing—that is, robbing from broken fruit. This is one of the nice questions,

and should be submitted to competent legal authority. We would advise A. B. S. to correspond with the General Manager of the Bee-keepers' Union, Mr. Thos. G. Newman, Chicago, Ill. If not a member, he should become one at once.

C. E., of Colorado, wants to know why bees will cluster on the outside of the hive. *Ans.*—The clustering on the outside is usually caused by too hot weather or an entrance that is too small, or both. Of course, it is assumed that they would not thus cluster out were it not for hot weather; and, the entrance being small, they are unable to keep the hive sufficiently cool by fanning. You can smoke the bees into the hives again, but they will come out. If the hive is too small, give them more room by means of an extra super, and see that the whole hive is properly shaded.

L. V. T., of New Jersey, says that, the honey-flow having now ceased, he has divided his bees, and would like to have them build up strong for the fall flow. He asks whether sweetened water would cause them to do this; and if so, is there any liability of its remaining in combs unevaporated or souring. *Ans.*—Sweetened water given in small amounts daily ought to cause the bees to rear enough brood so as to put them in fair shape for winter. Sweetened water will give no trouble, because the bees will soon evaporate it down. It is usually preferable to mix the sugar and water in about the proportion of ⅜ of the former to ⅛ of the latter, by bulk.

R. N. L., of Nebraska, asks how far drones and queens will fly from the apiary in mating. *Ans.*—No one can tell positively; but it has been observed that, of two apiaries five miles apart, one containing Italians and the other black drones, there will be hybrids in both in time, even when it is known that there are no bees between—certainly no Italians except those in the Italian apiary, showing that, if the queens and drones each fly about half way, it would make it 2½ miles. From various facts that have come up, it is evident that mating may occur two miles from the apiary, or about that, though, as a general rule, it will take place within half a mile, and generally a little remote from the apiary at least.

J. L. A., of Kentucky, inquires whether it ever gets so hot that the bees can not make comb. *Ans.*—If the hive is painted a dark color, and is not sheltered in some way from the direct rays of the sun, it may be so hot that the bees would refuse to build comb, or, in fact, do any thing else. Indeed, there are times when the inside of the hive becomes so hot that the combs melt down, and then, of course, nothing can go on decently and in order. As a general thing, however, bees can keep the hive cool by means of the artificial currents they make with their wings; and it is only when they can not do this that the combs melt down. We must not expect our pets to accomplish too much. Give them a little assistance in the way of a shade.

C. N. W., of New York, asks why the bees uncap sealed brood. *Ans.*—The brood may have been overheated or chilled at some time, or possibly moth-worms may be making their way unobserved by you under the cappings. Any or all of these causes may result in the bees uncapping the brood. He also asks why the bees sometimes come tumbling out of the hive in lots of two or three, clinging together by the feet, and, after struggling a while, free themselves. This is evidently a case of a robber or two getting past the sentinels at the entrance, and, finally, being discovered by the workers farther in the hive, they are grabbed. A struggle immediately follows, in which more of the bees grab the robber; and the result is, they come tumbling out of the hive as stated, but, as a general thing, the robber frees itself.

S. F. T., of Illinois, wants to know how to make his bees work on buckwheat that is two miles distant from the apiary. *Ans.*—It is not always that buckwheat yields honey; and under such circumstances it would be impossible to get the bees to work on it, even if it were within a few rods of the apiary; and in the second place, bees do not usually work to advantage at points further distant than a mile and a half; so that, even if the buckwheat in question did yield a little honey, it would be just a "little fur off." In this connection it would be proper to remark, that bees have been known to work, and work well, on fields two or three miles from the apiary. In some instances they have been known to go seven miles over water or over prairies; but all of these are exceptions to the general rule.

B. T. S., of West Virginia, asks how to get a black queen out of a patent hive, without movable frames. *Ans.*—Turn the hive upside down, if it has an open bottom, and place over it a small inclosed box, on the under side of which is a hole smaller than the patent hive. Drum on the sides of the hive until all or nearly all of the bees run up into the box. Presumably, the queen will go with them. As black bees run and scamper over each other, it is very difficult to find the queen, especially if you are not an expert. Place perforated zinc over the hole in the box; set the patent hive back on its stand, or, better, put a new hive with movable frames on the old stand. Now place the box, with its perforated zinc, in front of the hive; smoke or drum the bees out. As the queen is larger, she will not be able to pass the perforated zinc, and will be detained in the box. If no zinc is at hand, shake the bees out on the ground in front of the hive, a short distance from the entrance; and then, as they crawl into the hive, look sharp for the queen. We might add, as a second thought, that it may be better to put the perforated zinc in front of the entrance. The queen will, of course, be barred from passing into the hive.

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

When the bees swarm I take and give the old colony a pulled queen from some choice stock, and this prevents all after-swarming and Italianizing at the same time. EMERY NELSON.
Bishop Hill, Ill., July 20.

WIRE SCREEN IN SMOKER-NOZZLES.

About a dozen years ago I placed a wire-gauze spark-arrester in the nozzle of my Bingham smoker, and was much pleased with it. I wrote to Mr. Bingham, suggesting this as an improvement. He replied, thanking me for the suggestion, but said that he had already tried and discarded it, and thought I would soon discard it. I did, and have never used it since.
Excelsior, Minn. JOHN W. MURRAY.

[Yes, but read this:]

WIRE CLOTH FOR ARRESTING SPARKS IN SMOKER-NOZZLES.

As to using the window-screen wire cloth in smokers, I will say I have used a Bingham smoker for three years, and did not have it a

month until I threw away the "riggin'" Bingham sent to hold the fire in, and inserted a piece of window-screen wire cloth in the nozzle. Had I to do without the wire cloth in the Bingham, I would do without it.

Atherton, Ind., Aug. 7. G. F. AYRES.

AN EIGHT-YEAR OLD WHO CAN FIND QUEENS.

I can not let Leah Atchley and Ralph Benton take the honor of being the only little folks who take great interest in bees, and love to work with them. We have a little boy, eight years old June 1, who works among them without gloves or veil. His mamma died before he was two years old; since, he has been his "auntie's boy." When I work among the bees, "Ed" does too. He can see a queen as quickly as any one, and always looks to one side of the frame while I examine the other. He owns an interest in the bees, and next year will manage a part of them alone, if the Lord spares us till that time. He is named George Edward Davis.

MRS. SARAH E. DAWSON.

Montrose, Col., Aug. 8.

HOW I SCRAPE SECTIONS.

On page 631 you use this language: "By the way, we should like to inquire here what sort of device our comb-honey producers have been using for supporting the sections while being scraped." My super, or section case, has slats for the section to rest on, so there is very little bee-glue that gets on the bottom, and none on the ends; and before the sections are taken out of the case I lay it on a shelf where it is convenient to get at, and with a piece of glass I take both hands, so as to apply considerable strength, and soon clean the tops of a whole case; then when taken out of the case I hold the section in my left hand while I finish. Being in the case solid, they need no holding while I scrape the tops. The piece of glass should be large enough so you can use both hands to advantage. O. B. BARROWS.

Marshalltown, Iowa, Aug. 19.

THE NAMELESS BEE-DISEASE.

Friend Root:—Many are the illusions under which bee-keepers labor, and more especially beginners. For their benefit I wish to relate an experience of my own during last June. I had a colony of Italians whose queen I prized highly for her size and color, and also for the deep orange-colored workers she produced. On my arrival at the farm one day, I saw what seemed to me to be the "nameless disease" in its worst form. A large lot of bees were lying in front of the alighting-board, some dead and some kicking. Every thing about the hive looked very quiet; but bees kept bringing out, leisurely, half-dead sisters, adding them to the pile of dead in front of the hive. "The nameless bee-disease, without a doubt," said several of my bee-keeping neighbors. However, I knew my golden-colored queen and her deep-yellow workers, and saw that, now, half of the bees of the hive were blacks and hybrids. Upon opening the hive I found that a dark queen had taken the place of my bright Italian one, and my golden workers were about half mixed with hybrids—no dead bees in the bottom of the hive—no fighting; but the bees were still at it, carrying out half-dead workers. All was plain to me; to wit: A hybrid swarm of one of my neighbors had taken possession of my hive of Italians, and killed my queen. Peace had been or was about to be established when I saw them, although, for several days more, dying bees were carried out. I superseded to-day the hybrid queen by a fine yellow one. If both colonies had been of the same color, mine would have been pronounced a case of the "nameless bee-disease" by everybody versed in bee-literature. CHAS. F. MUTH.

Cincinnati, O., Aug. 19.

CARNIOLANS; THE GRAY VS. THE GOLDEN.

What are the distinctive marks of the Carniolan bee? I see in the journals so many assertions, pro and con, that it seems to me about impossible to come to any conclusion on the subject. I have what were bought for Carniolan bees; but after reading, and comparing the ideas and conclusions of different writers, I don't know whether I have them or not, or whether I have Italians or a mixture of Italians and something else. I think that, if any one is capable of giving a satisfactory solution of the question, "What are true Carniolans?" you should be a reliable referee. If the gray is the genuine Carniolan, then what is the golden? Is it a variety, as the white and brown are varieties of the Leghorn breed of fowls? And if a variety, how has it been produced? Please give your ideas in GLEANINGS.

Denison, Texas. C. FISHER.

[Frank Benton, who handled the bees for years in their native home, says that the typical Carniolan is a dark steel-gray bee. The so-called "golden" Carniolans seem to be nothing more nor less than Italians with, perhaps, a little Carniolan blood; for Mr. Alley admitted that his golden Carniolan queens were mated in an apiary but a little over a mile from a large apiary of Italians. Plenty of proof has been produced to show that queens will mate, not only a mile from the apiary, but sometimes three or four miles. The source of the yellow in Mr. Alley's Carniolans is plain. See J. A. Green's article in the *American Bee Journal*, page 467, vol. xxviii.]

THE LANGDON PRINCIPLE WITHOUT THE DEVICE.

The principle of Langdon's swarming-device can be used without using his device. Simply put two colonies close together, and put on one an Alley trap and nail over the zinc a thin board. Now it will act as an escape. All bees going out can not get back; and, being so close together, the bees will go into the open hive. In a week change places with the brood-chambers. This gives the bees the same entrance, and all bees now coming out of the hive, with the escape, go right into the hive that is open, without any fussing, as the entrance is in the same old place; you have simply changed places with the brood-chambers. I think the principle is a success, for the colonies are working nicely. They have 40 sections pretty well along. They work like extracting swarms.

By placing the hives with entrances facing each other, and bottom-boards touching so the bodies will be about 4 or 5 inches apart, and using an escape-cone in front of the hive that has no sections, you would not need to lift the hive to change the brood-chambers, for the entrance is exactly in the same place, and bees would find it sure. It would make no difference which hive had the escape in regard to bees finding entrance. By the above it will cost only the cost of a box with a bee-escape, to try the plan. Those having the Alley trap can use it as a bee-escape by nailing a thin board over the zinc. For the trap, entrances should be 7 inches apart. F. A. SALISBURY.

Syracuse, N. Y., June 20.

Inclosed please find $1.00 to continue our subscription for GLEANINGS. We consider it to be the best bee-journal that we have ever taken, and do not intend to ever be without it in the future.

Santa Ana, Cal. EMERSON BROS.

REPORTS ENCOURAGING.

My bees are doing splendidly this season.
Little Elm, Tex., Aug. 7. POKE MARTIN.

Bees in this section have not done so well in ten years as they have thus far this season.
Canastota, N. Y., July 3. A. H. ROOT.

REPORTS DISCOURAGING.

I am well pleased with GLEANINGS, but my bees have not done any thing this year, and I am not able to take it at present. It has been the worst honey season this year I have ever seen. I have 50 hives, mostly Italians, in a house 8x36 feet. J. W. HOUSE.
Hollins, Ala., July 22.

Friend Root:—I am glad to hear of so many good reports this year from neighboring States; but we here have to record this the poorest of this series of very poor seasons. I got, on an average, a little more than a pound to the hive; but I may get some honey this fall.
A. T. MCKIBBEN.
Flag Spring, Ky., Aug. 10.

A large district in this part of Colorado, and how much more of the State I do not know, has very little honey. The good reports have been coming in. The bad will be along by and by. For two years now Colorado has been behind in honey, and can not send a respectable exhibit to Chicago. I did want so much to be at the meeting in October! but it looks now as if we should have to walk if we get there.
Loveland, Col., Aug. 8. R. C. AIKIN.

DISCOURAGED.

I shall have to request you to stop GLEANINGS. Bees have made a failure this year. I am discouraged. We got no clover honey, and what honey we did get is very dark and hardly fit to eat. I can't imagine what was the matter with the clover. It bloomed well, but it was a month late, and gave no honey.
Springfield, Mo., Aug. 12. W. H. RITTER.

POOR SEASONS IN INDIANA.

The *Progressive Bee-keeper* says, "Hope, the bee-keepers' bank account, is often overdrawn." Well, the name of the bank here has been "hope" for four or five years at least; and at last there has been a run on the bank. The bank is "busted," and not likely to resume; but we are a little better off than S. E. Miller, for we have enough to spread our buscuit—providing we don't use too many buscuits, and spread the honey a little thin. I have kept a strict honey-account for the last four years, and have kept supplies (from you) for sale all the time, to help out. I have had each year about 50 colonies. I never lost any colonies except those that became queenless or did not gather enough honey to build up on, and had to be doubled up. I had 50 colonies in the spring of 1893; bought $36.00 worth of sugar, and commenced to feed a pint a day about April 25th (scarcely any thing from outside) in evening to each colony. I had them in very fine shape. I read, "Prepare for the honey-shower." Hope brightened and I took courage; invested $15 or $20 more in Root's Dovetailed hives. Well, one consolation—when I read next year, "Prepare for the honey-shower," I shall have 20 dollars' worth to fall back on that have never been opened. Well, I increased from 50 to 70, and did not get 300 lbs. of honey—did not get half as many pounds of honey as I fed sugar. As a result of the four years, I shall have, say, 50 colonies, and may have to feed to winter yet some 30 or 40 empty hives; an extractor (no use for), a sun wax-extractor (for sale cheap), and about $40.00 of a balance on the credit side of the account. So I shall step over into the ranks of blasted hopes.
Atherton, Ind., Aug. 7. G. F. AYRES.

NOTES OF TRAVEL.

ON THE WHEEL, AUGUST 5.

Happening to be in the neighborhood of Mr. Wilbur Fenn's, whom I mentioned visiting on page 533, I thought I would take a look at his potatoes. You will remember that, about June 1, I saw his potatoes that he intended to plant spread out in his cool cellar, with scarcely a sprout on them; and on this present visit, Aug. 5, we had just been having a nice rain, and I supposed he would be out among them. On inquiry I learned that such was the case. A bright little girl and a couple of boys volunteered to take me down to the field where their papa was at work. As we passed through the garden I began to make exclamations of surprise to see it looking so well during our severe drouth. The children, I found, knew all about it. They could tell me just where the Snyder blackberries were, the Agawam, and all the other varieties. My youngest brother, who was just then paying me a visit from his far-away home in Tempe, Arizona, declared something as follows:

"Why, brother Ame, I believe I am more interested in looking at the blackberries than I shall be with the potatoes. Perhaps you had better go on, and leave me here for a little while."

I accordingly did so. Of course, I enjoyed the blackberries (in two ways); but when I got to where I could see around the rank growth of canes, I did indeed enjoy a glimpse of that potato-field. The hundred bushels of seed had been spread over about nine acres, and it was a great deal like friend Terry's clover. There were no bad spots, and very few extra good spots. The foliage was rank and green, and the cultivators were just stirring the soft fine soil in a way that ought to make any one who loves farming feel happy. There were a few weeds scattered here and there; but my friend said the cultivators would destroy the greater part of them. Said I:

"Why, look here, Wilbur, where are the bugs? What have you done to get rid of them?"

"I haven't done any thing."

"But haven't you had any bugs at all? has your potato-patch looked just like this all through this season, when everybody else has been having such a terrible time with the old-fashioned kind and the new-fashioned kind too?"

"No, we did not have any; and, what is more, I did not expect to have any."

May be you think this pretty cool, dear reader; but I tell you, a farmer who has studied into the matter, and has become acquainted with nature and nature's laws, can often predict a successful crop in just this way. I did not have time to get at the full particulars; but I think his success in evading bugs is, first, by planting late; then by having soil and every thing else in such shape that he can get such a rank growth that the bugs do not relish

them or make much headway in their work of destruction. He has visited friend Terry, and they have compared notes, and talked matters over. Now, a great truth comes in right here, and one which, I am sure, friend Terry will fully indorse. It is this: Mr. Fenn, as he is situated, and as he has been working, does not deem it best to follow Terry *exactly*. In the first place, he does not put in wheat after his potatoes; therefore he plants them late—just as late as he can and avoid frost; and so with other things. But a visit to friend Terry's stimulates him to more energy and harder study in the line he is working on, even if it be a little different from that of Terry's. That we may learn to *think* and *act* for *ourselves*, is, if I am right, what Terry is trying to teach. His potatoes are planted on clover sod; but there is a heavy growth of timothy mixed in with the clover. He plants with a machine. He said he agreed with friend Terry about hand-planting, and would prefer it; but as he is situated, it is hardly possibly for him to take time to plant by hand. As we went over the field, we found, as Terry has said, here and there a hill entirely missing. Sometimes two hills pretty close together were missing. These misses amount to more than I had supposed until friend Terry called attention to it. Mr. Fenn cuts to one eye, or pretty nearly, as Terry does. I asked him if there were no remedy for these missing hills when planting by machinery. He said he knew of none. Of course, there will be less of them if you set the machine so as to put *two* pieces in occasionally instead of one; but when you reach the proper limit, the remedy is as bad as the disease, or even worse. Now, I am inclined to think the men who make the planters will in some way get around this objection. I suggested putting something else in to fill up these empty places; but in that case you have *two* crops on the same piece of ground, and the fuss and bother would be more than the crop would be worth. Another thing, the value of the land has a bearing upon the question of missing hills. In my comments on Mr. Fenn's farming, on page 534, by a slip of the tongue I said Empire State when I meant to say Monroe Seedling. He calls my attention to it in the following extract which I make from one of his letters:

I tell you, cousin Amos, good plowing is absolutely necessary for the best success in farming; and the farmers who plow as they should are very scarce. The variety of potatoes that I grow is the Monroe Seedling instead of the Empire State, as you put it. I wish you would correct this, for a year ago last spring I advertised the Monroe Seedling for seed, saying that I should plant them entirely myself. Now, people will think that, while I *plow* straight I don't *talk* straight. The Empire State is behind the times, and run out. I have grown the Monroe Seedling for three years, and think lots of it.
Tallmadge, O., Aug. 12. W. W. FENN.

I am ashamed of this blunder, for we ourselves discarded the Empire State from our catalogue some years ago.

Before we left, I wanted to see the crop on that ground where that straight plowing was done. It seemed almost incredible that there should be a good stand of corn where he was plowing so recently as June 1. But there it was. I tell you, friends, there is not a more encouraging sight in this world than an enthusiastic and successful young farmer; and one secret of the success I have mentioned was the bright intelligent young wife who shows by her looks that she is in full sympathy, and knows all about the work that is going on outdoors as well in the house. Yes, and this is all true, even if she did have a fine healthy-looking baby in her arms, that was no part of the household during that other visit, June 1.

OURSELVES AND OUR NEIGHBORS.

Watch ye, stand fast in the faith, quit you like men, be strong.—I. COR. 16:13.

Since something has been said about the way men are "built," or, if you choose, excusing mankind for various sins on the ground that they were "built that way," or could not help it, the matter has been a good deal in my mind. Perhaps the fact that so many communications or suggestions have come in through the mails in regard to the matter has something to do with it. I hope no one will feel hurt when I say that it seems to be those who reject the Bible as the word of God who claim that a man acts the way he is built, and that the blame, therefore, rests upon the builder rather than the man himself. Here is a letter right before me, from away off in California, in this line:

Friend A. I. Root:—If I rightly understand, you claim that all human beings are "free agents"—*i. e.*, capable of choosing and doing the right or wrong at all times and places. It is said of Jesus, that, at a certain time and place, he *could not* do many mighty works because of their unbelief. St. Paul says, "The good that I would, I do not; but the evil which I would not, that I do." Was Paul a free agent? If not, why not? J. H. BEMIS.
Ontario, Cal., Aug. 12.

Friend B., I thank you for addressing me as you do—"Friend Root." I take it from this, that, even if you do not agree with me, you cherish friendly and brotherly feelings. A good many times, in discussing matters of this kind, before making a decision I take a glimpse of what the results of such decision may be. Although you do not say so, I take it that you do not accept the doctrine of free moral agency. Now, let us look the world over and consider what results will follow from your position or from mine. I should say to every man, woman, and child, "You are responsible for your acts;" and then I would add, in the language of our text, "Stand fast in the faith, quit you like men, be strong." Will it not be better, as a rule, to preach and teach in this line? Of course, there is a *limit* to human responsibility. After we have done all we can with a man, or for him—that is, all that we can *consistently*, and he still persists in error and crime, our responsibility is ended. Even if we are responsible for our own acts we can not undertake to be responsible for the acts of others; and, in fact, even the Master himself was helpless in a certain degree on account of unbelief. Just one illustration: A good friend of mine was greatly elated a short time ago because he had found a medicine at the drugstore that would cure the appetite for tobacco. He was going to do mighty things among his friends and acquaintances. After the drug had performed several wonderful cures, however, he met a man where it entirely failed; and this last friend finally gave as a reason for the failure, that, to come right down to it, he "didn't *want* to be cured." Now, the unbelief of the Scriptures, I suspect, was right along in this line. Jesus could not do any mighty works of healing, because they did not really want to be cured at all; and, while we are about it, perhaps I might say that this illustrates what is so often meant by the word "unbelief" in the Scriptures.

Your second case, in regard to St. Paul, I would explain thus: Paul realized that he was human, and that to err is human. The best of us, even when we have the best intentions, make grievous blunders; and before we know it we have done just that which we would not do; and it is not only mistakes that we make, for we are *sinful* as well as erring. The Bible tells us, "The heart of the sons of men is full

of evil, and madness is in their heart while they live." I know that some of our unbelieving friends reject this; but after having tried my level best to do right in the sight of God, and for a period of a good many years also, I have discovered again and again to my sorrow, that not only is the human heart sinful, but that *my* heart is sinful. Evil impulses and sinful thoughts sway me this way and that. My opinion is, that Paul had a like experience of his own in mind when he uttered these words; and that very passage you quoted has been wonderfully helpful to me again and again. When *I* fail (or *partly* fail), even after having battled earnestly, I find that even St. Paul himself did the same; for he has left on record his own experience where he says, "The good that I would, I do not; but the evil which I would not, that I do." Let me remind you, dear friend, that we are not apt to discover these imperfections in ourselves until we commence rowing upstream, as I explained in our last issue. It is only when we begin to strive with real earnestness and vigor to root up and put down the inborn sin of our natures that we find these obstacles, and are reminded that the path that leads to eternal life is not only straight and narrow, but it is an up-hill path. It is climbing up, up, up, like the trail I told you about up Wilson's Peak. But yet, dear friend, St. Paul was a free agent so far as the choice of his mind was concerned. Like you and me he was created in God's own image, in that the power was bestowed on him of choosing right or wrong. And this is where responsibility lies. We are not always responsible for the result, but we *are* responsible for choosing the path in which we *intend* to go. Paul chose the straight and narrow path, and therefore he could say, honestly and truly, when near his end, "I have fought a good fight, I have finished my course, I have kept the faith; henceforth there is laid up for me a crown of righteousness, which the Lord, the righteous judge, shall give me at that day."

Another thing, free agency belongs to other people as well as to ourselves. Other people have their rights in this very matter of free agency. When any thing we wish to do conflicts with the free agency of our neighbors, of course there is difficulty in the way. When we decide, in a theological sense, that man is a free agent, we do not mean that he is free to trespass on the rights of his neighbors, nor even to do any thing that would interfere with their free agency. When a man says that he could not help stealing, and urges as an excuse for so doing that he is not a free agent, then we have a right to question.

Here is another letter from a very good friend of mine, as you will see from the way in which he addresses me. I have taken the liberty to cross out considerable of it, as it was rather too long for our space.

Dear Bro. Root:—I take a great interest in your talks in GLEANINGS under the head of Ourselves and Neighbors, and I believe they are calculated to do a great deal of good. I was much interested in J. D. Kaufman's letter, and your reply to it. You have done it well. But the principal object of this letter is to draw your attention to the low standard of Christianity which you teach when compared with the teaching of Christ and the apostles. I should like to see you put the standard up where Christ puts it: "Thy will be done on earth as it is done in heaven;" "Be ye therefore perfect, etc.;" and as Paul puts it in the 8th chapter of Romans. Paul says in Galatians, "Walk in the Spirit, and ye shall not fulfill the lust of the flesh." And the Savior says in John, "He that abideth in me, and I in him, the same beareth much fruit." Now, we do not find anger, nor any thing of that kind, in the fruit of the Spirit. Don't depend on a drink of milk, Bro. Root, to keep you from giving way to temptation, or you will surely fail; but if you fully trust God, *never*. I am not writing about something that I know nothing about experimentally. I have been trying to live a Christian about 25 years, but have learned only within the last two years the privilege of having my heavenly Father's will done continually, allowing the Holy Spirit to teach and guide, to work in me to will and to do of his good pleasure. MOSES PIERCE.

Brinsley, Ont., June 25.

You will notice that these two letters are from opposite standpoints. The former takes me to task because I place *too much* responsibility on humanity; the latter, because I do not place *enough* responsibility. I like this latter letter, however, and agree in the main with all the writer says. I do know it is our privilege to stand on higher ground spiritually if we will; but I am not yet satisfied that even God himself intended that we should live on a plane so far from earth and so near to heaven that we do not have struggles with temptation. I fear I can not quite agree with him where he says, "Do not depend on a drink of milk." If he means that I must not place too *much* dependence on a drink of milk, then all right; but if he means that we need not even take the trouble to nourish our bodies before meeting hard trials, then I think he is going too far. A part of the Lord's prayer is, "Lead us not into temptation." By this I understand that we are to avoid danger; that we are to take all reasonable precaution against being surprised by the enemy, or taken unawares. Perhaps it may be well to define what anger is. I know there are Christian people among us who say they never get angry; and much credit is due them, certainly, if they have so much regard for Christ Jesus, whom they are trying to serve, that they never let it be evident to those about them that they are disturbed in spirit. I always look with respect on a man who has grace enough to keep still and not say a word, even though he may show by his face that he is vexed and sorely tried. For instance, in an altercation between neighbors, one strikes another in the face. If the man who is struck has any spirit at all, the hot blood of resentment will show itself in his countenance; but if he can, under such provocation as this, keep still and hold steady, I for one should call him a soldier. I do not care if his face is flushed, nor do I think a whit less of him, even though his voice be so unsteady that he can scarcely speak. Now, there are these, and some excellent Christians too, I grant you, who insist that one should be *cheerful* and *smiling*, even under such a trial. If I am mistaken in this, I wish to be corrected. Dear friend Pierce, I hope you will bear with me when I say that I should like to inquire of your neighbors whether it is really true that you have so far succeeded in what you advise, that you never need to apologize for having given way just a little to some wrong impulse. There is in our community, as well as in most communities, I believe, a class of people whom we designate as "sanctified" or "holiness" people, and they are most excellent people too. We have much cause to commend them; but I do think they go to extremes in just the matter I am speaking of. They hold up an exceedingly high standard, and they exhort with much energy that others shall come and stand beside them on this higher plane. One good friend of mine spoke so earnestly on this matter in a public meeting that I made the remark that I should really like to inquire of this man's neighbors whether or not he lived up to his preaching. Now, please do not think that I mean to be harsh or unkind when I tell you that I did have an opportunity of finding out in regard to this very matter.

The report came, and I think it was fairly given, that he did not love his enemies, nor even pay his debts, any better than the common run of the members of our various churches. Another point comes in right here: When I was away from home four months on that long California trip, I was for several weeks entirely relieved from responsibility. The doctors insisted that I must be free from care and worry. Well, one day I was thinking it over and wondering what the matter was. For several weeks I could not remember that I had had even the least feeling of vexation. I was traveling most of the time, and was exposed to all the annoyances attendant upon travel. I was sick, and laid up for many days; but my mind was all tranquil and at peace. It was so unlike my usual self that I began to wonder—now, please do not think that I am irreverent if I say something that seems almost like joking on sacred subjects. What I started out to say was this: I was so free from temptation of every sort, and it was so easy to love everybody, that I began to wonder whether the old self was not sort o' fading away, and that, perhaps, I was getting, as people sometimes express it, "too good" to live very much longer. Now note the rest I have to tell you. I came back home; and gradually, as returning health permitted (and the boys and the rest of the family), I began to take up cares and responsibilities. My friends, if you expect a man who has charge of a hundred workmen to keep his tranquility as does one who has nothing else to do in the world but to please himself, you are making a big mistake. When care and responsibilities had adjusted themselves upon my shoulders, as they were before my sickness, I was a little saddened to find that A. I. Root was just about the A. I. Root of old—no more, no less. Other temptations, that seemed to have faded, trooped forward again, and I was fighting and praying over life's battles as before. Now, then, where does God want me? where does the world at large want me—free from care and worry and responsibility, with my spirit unruffled and untried, or bearing my share of the burdens, tempted and tried as before? In the one case I should not be here to answer your letters or to look over your needs and wants at all. In my absence a good many would have to be out of employment; and if I knew nothing of life's trials, I could not write these papers of encouragement to those who have, perhaps, harder trials than mine to bear. Jesus said of his disciples, when he prayed for them, just as he left this world, "I pray not that thou shouldest take them out of the world, but that thou shouldest kept them from the evil." I do not mean to say that friend Pierce is wrong. He is right, and I thank him for his brotherly rebuke; but I hardly believe that a man can do very much in this world—that is, very much for his fellow-men—unless he meets trials and conflicts. Let me give you one more illustration in closing, that seems to bring this matter up in its proper light. The Savior once said, you know, that he came into the world, not to call the righteous, but sinners to repentance.

There was once a man who, from childhood up, seemed to have a special fondness for all womankind. He was "built that way" some of the friends would tell us. Well, in one sense we all ought to be "built" that way, especially when this trait, or whatever you call it, is sanctified by the love of Christ Jesus. In this case this peculiarity was not sanctified until the man was well along in life. While he was naturally honorable, upright, and fair in every thing else, there seemed to be a sort of looseness about him in this one direction—not that he was vicious or bad, or meditated any sin or crime. Even in childhood he sought the society of the opposite sex, in his plays; and as he grew older, it seemed to be the most natural thing in the world for him to single out some special one and show a marked preference for her above all of her sex. If he was away from home, it seemed to make but little difference; and his particular sin, or inconsistency, seemed to be in the fact that he would give each new favorite to understand that she alone was the *particular* object of his regard. If he did not say so in words, he said it in manner. It might seem a little strange that such a man as this should happen to unite himself with one of the best of women; but so it was, and for a time he was loyal and true, as every man should be. Without the grace of God in his heart, however, as a restraint, it is nothing strange that, as years passed, his old fashion, or the way in which he was "built"—if you will excuse me for using the expression again—began asserting itself. His sense of honor, however, and his keen discrimination of what is ordinarily expected of a man with a family, kept him within the bounds of propriety at least. As he moved about in the world, however, and especially when business called him from home and into remote places where no one knew him, the temptation was very great to let it appear, at least for the time being, that he was not a man of family. Satan seldom lets opportunities slip. The Bible tells us that he is *constantly* going about, seeking whom he may devour; and this individual ere long felt, as some of the friends have expressed it, that the impelling power to evil was so great that he was hardly responsible. He was "built that way," and he "couldn't help it." However, before he had gone over to the adversary entirely his early religious teachings, with other influences, brought him fairly and squarely face to face with the gospel of Jesus Christ. He prayed that the image of his Savior might take the *place* of all and every thing else that had tempted him. Deliverance came to him, as it has to thousands before, and, in spite of the way he was "built," he was a new man. Yes, he was literally "built over" again, and that, too, when he was well along in life. For a time, at least, his experience seemed to be like that of many of our intemperate friends. No trace remained of his former great and grievous trials. Like a new-born child he had nothing to do but to wait and watch for the "Lamb of God who taketh away the sin of the world," to lead him step by step in that path that leads from earth to heaven. As the years passed, however, God seemed to call him into new and untried paths and experiences. Like the humble followers of Christ Jesus, it seemed to be the divine will that he should *not* be taken out of the world, but that he should mix a good deal *in with* the world. Need I tell you that, little by little, temptations began to creep back? For a time he was stumbled and was perplexed. Was it God's will? was it right that he should be obliged to fight day after day, in season and out of season, against these powers of darkness that would pull him down? There was a time in Paul's life, you may remember, when the reader of the sacred history would be tempted to say, "Why, Paul must surely have been making a mistake and a blunder. What earthly good could he accomplish by going to city after city, only to meet with persecutions by mobs, only to stir up bloodshed and crime, only to get himself stoned and dragged out of the city, narrowly escaping with his life at every crook and turn?" I remember thinking of that very thing, and I wondered why Paul did not get discouraged. It was cheering to me, however, to find that,

even at this very crisis, an angel came to him in the night, saying, "Be not afraid, but speak, and hold not thy peace; for I am with thee, and no man shall set on thee to hurt thee."

One day this man of whom I have been telling you had occasion to visit his home in the middle of the day. He wanted some book or paper, that all at once became important. He felt sure that his wife would be able to find it. In fact, she always found every thing as soon as she knew it was much needed by him. A wife might say, "Well, I can not tell you where it is now, I am sure. I do not see but you will have to get along without it." His wife never said such a thing to him. Her love and sympathy and kindly good will toward him all through the years they had lived together were such that she would drop every thing in an instant when she found she could be helpful to him. As he needed her help a good deal, she knew all about his things, his clothing, his books, his papers. Even when he threw things into the waste-basket, thinking he should never need them again, when something that had been deemed useless came to be of great importance, she would bring just that thing to light. Sometimes he found she had worked hours in accomplishing some little thing that he had at some time expressed a slight wish to have. Such was her fidelity and devotion to every thing that concerned his whole life, that he almost began to be afraid to suggest to her his wants and wishes. Some of you may be tempted to say she had no individuality of her own. Not so, by any means. Was she not the mother of his children? and was not that fact alone sufficient to make her feel that, whatever was *his* interest, was her interest also?

Let us now go back to the point where he came into his home. The weather was warm, and the doors were all open. As his feet touched the carpet it gave back no sound. She was intent on her work, and did not hear him. It was his purpose to ask her whether she could possibly find such and such a book or paper. He stopped, however, without saying any thing. She was intent on her work—something, doubtless, for their home. The setting sun threw a ray across her head as it was bent over her work, and revealed here and there a thread of silver. Every hair in that dear head was loyal and true to him and *his*, and the gray hairs had come thus through unwearied toil, that he and the children might be a blessing to the world, and that they might honor Christ Jesus. As he stood there he remembered a temptation he had just passed through. Please do not misunderstand me, dear reader. This man had learned, long before then, not to betray by any outward act the conflict that was going on within. The battles that he fought then were, as a rule, seen only by the God above and himself. As he stood on the carpet and looked toward his comrade and helper through life, he said to himself, "*No*, NO, NO! If Satan should tear me limb from limb, while there is a single drop of the blood of life in me, I will not, even in thought, be unfaithful to her who has been *such* a companion and helper thus far through life."* He went away and did not ask for the thing he wanted; and, in fact, he soon forgot pretty much all about the whole affair; but before he knew it, a strange heavenly peace was hovering over him. A voice seemed to say, "Well done, thou good and faithful servant;" and for hours afterward it seemed to him that angels were near. After the Savior was tempted, we are told that "angels ministered unto him." Do you not see, friends, that this man had simply followed the injunction of the stirring text at the head of what I have written—"Quit you like men, be strong"? Do you not think he was a better teacher to his class of boys in Sunday-school than if this thing had never happened? Was he not better able to judge and decide, as cases of sin and crime came up before him, than if he had never had any such experience? I may be mistaken, dear friends; but it seems to me as if some of you who have written me think it is wrong for a man to be tempted—or, at least, if he did his duty as a Christian he would never have any glimpse of what Satan has to offer.

Think gently of the erring;
You may not know the *power*
With which the dark temptation came
In some unguarded hour.

And now, friend Bemis, have you not more respect for a man who acts contrary to the way he is "built," or, in other words, who, through the grace of God, builds himself over, than for the one who yields to evil impulses, and then excuses himself afterward by saying that that is the way he was built, and he can't help it? And, friend Pierce, I am sure that you too agree with me that it did not hurt this man a bit to be *sorely* tempted and tried. *Yielding* to temptation is what hurts us, and we need not be ashamed to acknowledge that we do have fierce battles now and then. Why, we have the Bible for it—"Count it all joy when ye fall into divers temptations." And, lastly, let me suggest to these other friends who have challenged me to say how God could consistently *permit* sin and evil to tempt us or lead us astray. Why, see here. A man could not be *manly* unless he were human enough to know what it is to be tempted. If God should raise us to such a spiritual height as would entirely free us from temptation, we should be *men* no more; and our text, where it says, "Quit you like men, be strong," would not apply to us. Shall I define temptation a little more? Why, it is simply having a keen love and zeal for the things that this world furnishes. Most of these evils are all right if taken right; and the sin and crime are often in the excessive, selfish, or *perverted* use of God's gifts. A good strong well man has strong and powerful impulses from his physical unreasoning nature; and the God part that is in him—the mind and soul that God has given—are to rule and govern this unreasoning physical nature; and a man, to be *manly*, must go out into and *through* the world. He must be exposed to temptation and sin; he must feel these sinful longings coursing through his veins, or else he would not be manly or worth *any* thing. It does him good to hold back on these lower impulses. Unless

* I believe that God does at times see fit to lift men at once clear from their temptations. I think that those who are far down with strong drink are often so lifted and freed from bondage; but I do not believe that it is true, and I do not believe that it is wisest or best for any *man* to be so emancipated, that he nevermore has any more struggles with temptation. In the case I have cited, after this man became well rooted and grounded, and able to withstand temptation, God in his mercy seemed to think best to try him. Even our Savior said on the cross, "My God! my God! why hast *thou* forsaken me?" And I believe that, through the ages since then, God has many times seen fit to let us pray this same prayer in great distress. For the time being he seems to think best to let us battle alone, as the father lets the child, when he is a little older, make his way unaided. This world is to be redeemed from sin, not by God alone, nor yet by man alone. Either way would be bad. Man and God are to work together. He who expects that God is going to do it all will go to ruin; and he who expects to reclaim himself without God will also speedily find himself in the dust of humiliation. Yet there is a crisis often reached, when God seems to be pleased to see his beloved children "quit themselves like men, and be strong," as in the case I have cited.

there were a possibility of and a sympathy for selfishness in his nature, he could *not* be manly. If he felt no temptation, and knew nothing of what it is to be tempted and tried, he would not be worthy of the love and respect and confidence of any good woman, neither would he be worthy of the respect which God himself showed him when he *created him in his own image.*

AN EXCEEDINGLY KIND LETTER.

SOME VALUABLE MORALS BESIDES.

Dear Bro. Root:—I address you thus, for in your "Home Talks" I feel you are a brother to all mankind. I never saw GLEANINGS till yesterday. My aged father had some old copies given to him, which fell into my "lap," as it were, at an opportune time. Sickness in my family, of wife and children (we have buried four babies), with loss of property, has made me poor, and my *health* is poor. I have a dependent family on my hands, so I want to get at some kind of work. I was terribly "blue," when I got hold of half a dozen copies of GLEANINGS, printed in 1887 and '88. I felt $100 better after reading your Home papers and Our Neighbors.* Thoughts like this flit through my mind: *Five years* have gone by. Perhaps A. I. Root has gone to his "home above," and his sons are doing his life-work. Do *they* mix religion with *their* business as did their father? Well, I hope A. I. Root is still preaching his sermons by the "wayside," still living to help others. I feel I shall go forth to battle anew with life and its difficulties since reading GLEANINGS.

I write this line to you to thank you for writing such good little sermons that are so helpful to us struggling mortals. God bless you, if alive; and if dead, you still live.

Houlton, Me., July 26. S. R. SMITH.

P. S., 24 hours later.—I have a hobby. It is and has been potatoes. I have tried lots of new kinds—most of them disappointing. I like Terry. He raised a lot of Freemans from a barrel of seed. I was much elated when I dug a hill I raised in 1891. Joseph (*i. e.*, T. Greiner) sent me an ounce potato by mail. I got 8 lbs. from the hill. My ideas were up to high-water mark. Maule said he would give me a barrel if I got 60 subscriptions for the *Practical Farmer.* Well, I soon got the number and $50 premium. I got another lot of 60 subscriptions, and got another premium of $50. I always like to do good, so I told my brother-farmers the story of the ounce potato. I pulled in lots of subscriptions for the *Farmer* by promising two Freeman potatoes as a prize. In the spring of 1892 I got my barrel of potatoes. I gave 150 farmers their potatoes. All were more than pleased. In the fall, 90 per cent of my farmer friends would say, when they met me, "Prolifics." I went to the field and dug two barrels, and I said, "Prolifics." Now, you know Aroostook Co. is the banner one for potatoes. Maule says he sent me Freemans. I think he believes it. Still, I feel as if I had a mean dirty trick played on me. I used to be great authority on potatoes, and many took the *Farmer* for the sake of the potatoes. So, being poor, I feel very bad about the affair. I think it wicked to palm off something worthless for a good article. If these potatoes were Freemans, they are no good in Aroostook Co.

Next spring I want to buy some new kinds of potatoes. If you are alive, and I am on the shores of time, I want to get a few pounds of Early Ohios from some one you can recommend.

I used to keep bees, on a small scale, but I really think Aroostook Co. too cold; the winters are too long. Terry is great on strawberries. I often wonder if he keeps bees. I have been much interested in the six-year-old copies of GLEANINGS I found as stated; but there is an undertone of sadness about reading advertisements, and pieces you and your coworkers wrote six years ago. No doubt death has laid you or some of these writers low. I hope A. I. R. is preaching these short sermons by the wayside. I do like to help my brotherman. I *meant* well when I sold the Freeman potatoes. God knows this; still, a host of farmers think I took this method to get subscriptions. Now, I believe Maule is a good honest man; still, all seedsmen exaggerate awfully. Would it not be a beautiful world if all cheat, deceit, bickering, and strife, were blotted out? I wish Satan were bound hand and foot, for all time and eternity. I hear you say amen! I don't care whether you are a Methodist or not. I feel to say, "God spare A. I. Root."

I have read eight back numbers of GLEANINGS, and I feel well acquainted with you. Is the good wife still alive? Is Huber and the rest of your family still alive? Death took a beautiful girl, nearly five years old, from us, one year ago. She was a wonderful child; was one of the happy kind. Her favorite piece was "Rock of Ages." How little I thought the dear child would so soon be sheltered behind Christ, our Rock of Ages! I suppose you know all about these things. If death has not visited your family, it has your friends' and neighbors'.

You must pardon this long, poorly written letter. I am laid up in the house with a second edition of pneumonia, so I have had a feast with the eight numbers of GLEANINGS, and am having a pen-chat with the editor. I have got some encouragement from your Home letters. I hope you are still alive, pounding away for the good of men. S. R. S.

[Yes, friend S., I am still alive to thank you for your exceedingly kind and encouraging words. I know of few things that have helped and encouraged me more through life than such instances as you mention, where even an old cast-away number of GLEANINGS has fallen into some one's way and given him help and encouragement in battling against life's trials. You will see, from some recent numbers we send you, that the boys (my son and son-in-law) do mix religion with business—perhaps not exactly as I do, but in a way that I think indicates they are not living altogether for self. I have been so much interested in your potato-story that I have, as you see, given it entire. I am glad you told it, as it illustrates how many times we meet with grievous disappointment, even in our efforts to serve our fellow-men; and it pleases me exceedingly to have you still say, "Now, I believe Maule is a good honest man." I do too, friend S.; but with the immense business he has on his hands it is almost impossible for him to avoid disappointment, and perhaps fraud, in some of these little details. I will tell you what to do. Send to us the address of every one of those farmer-friends, and we will mail them this copy of GLEANINGS, marking this letter; and I will also mail one to Maule; and if he does not send to those 120 farmers some genuine Freeman potatoes, then I shall be disappointed. There was a great strife for the Freemans, as you may remember; and, even during this last spring, Maule was

* May I call friend Dadant's attention to the above expression? Of course, our friend speaks a little recklessly; but after all, is not the Christian faith—the faith I have been trying so hard to teach—*worth* something?

sold out; Terry could not scrape up another one, not even a small potato; and we advertised for them all over the land. The consequence was, that, by awkwardness, or perhaps by dishonest greed, some who paid for the genuine Freeman potatoes got something else. I am glad to say that all we received in answer to our call for them seemed to be genuine. Every time I made a purchase I inquired carefully into the character, standing, and reputation of the man who sent me the potatoes; and in every case I was told that they were good trustworthy people. It is quite a little credit, I think, to the great world at large, that no one even *offered* me any thing else for Freemans. There is a general and widespread desire among all our agricultural people, if I am correct, to avoid any sort of fraud or deception in this matter of new and rare seeds. Do not feel bad, friend S., even if somebody did play a trick on you or on Maule. I think every one of those farmers will admit that they received their money's worth in the *Practical Farmer;* for Terry's writings alone are worth the subscription price to almost any one. No, Terry does not keep bees. In fact, he has not a pig, chicken, sheep, nor dog, on his premises. He keeps only one cow to furnish milk and cream for the berries he raises. He is a specialist farmer—a man who believes in having a few things, and doing those things well, and buying of his neighbors what he needs, that he thinks it best not to raise himself. Hold fast to the Rock of Ages, dear brother, and trust God for the rest.]

TRADE NOTES.

THE PORTER BEE-ESCAPE; THE ENGLISH MODIFICATION OF IT, AND WHAT THE PORTERS SAY OF IT.

Friend Root:—Referring to the English modification of the Porter escape, illustrated in the Aug. 15th No. of GLEANINGS, and your comments thereon, permit us to say that we infer that you have not seen one of them. To be appreciated, or, rather, not appreciated, this is necessary. We have. The top is made of wood, and the body stamped from one piece of tin and fastened to the top with nails. The springs are passed through the slots in the sides of the body, and soldered directly thereto, no means of adjusting them being provided without or aside from bending them directly. Without this, accurate and uniform work is impossible. Such strips of spring metal as are required for the spring of a bee-escape, if brought to place by bending them directly, will not remain there for any length of time. Adjustment in some way is necessary, as it is impracticable to solder such delicate pieces exactly where required in the first instance. In general the workmanship is execrable. We should hardly expect to be able to give away such escapes, much less to sell them.

This open-at-both-ends idea is old to us, we having made and tested such escapes before we ever sold one of any kind. We inclose one made on this plan. If it is in any way superior to our regular form, we have been unable to find it out. In fact, we believe that the latter will free the super of bees a trifle the more rapidly as a rule, though there is but little difference in them in this respect. The reason that escapes of large capacity free the super of bees no more rapidly, if as rapidly as those of much smaller capacity, lies in the fact that, as the exit room is increased, the desire of the bees to desert the super decreases proportionately. We tested some escapes this season having 15 exits, and I have placed a number of such in the hands of others. We find them no more rapid than the single-exit form, and in no other respect superior. This is also the experience of others so far as we have heard from them. Such large escapes, when used with very large supers, may produce less excitement of the bees than the small ones; though our experience is, that the latter produce none to speak of, except in very rare instances, when used with shallow supers, say of a depth of 7 inches or less.

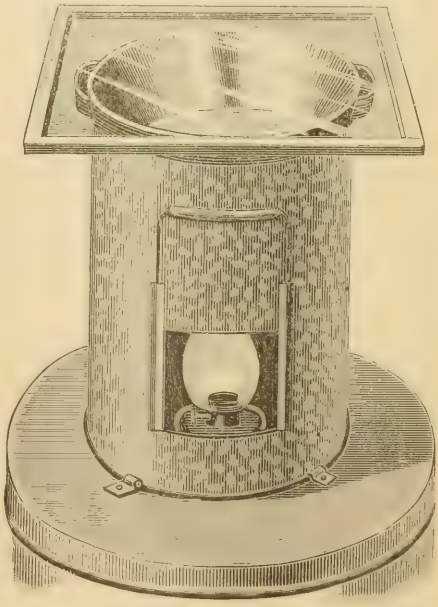
Regarding the outside-exit idea, now somewhat to the fore, we have been over the ground carefully. The arrangement has serious objections, and no advantages over the brood-chamber-exit plan. As a rule, it is not as rapid as the latter, unless the bees are confined till very much excited before being permitted to escape. But this plan will never become popular, because, aside from the extra work involved, colonies so confined require too careful watching to prevent smothering.

R. & E. C. PORTER.

Lewistown, Ill., Aug. 19.

THE TAYLOR WAX-EXTRACTOR.

Friend Root:—I send you to-day the photo of the "Handy" solar wax-extractor. I think it will make the machine plain. We had to turn the door to the front to make the lamp show. When in use the slide door is at the back. A good-sized lamp will answer for a small extractor. The platform on which the extractor-can is fastened is made from a discarded hive-cap. This is fastened on a post so as to revolve. This is an easy way to keep the can facing the sun. The thing will work with-



out the revolving stand, but there must be some place for it, and there is nothing cheaper than a post set into the ground in some warm nook, where the extractor may remain during the season.

I have been using this extractor every clear day lately. We had a large number of extra combs, advancing years making it necessary for me to curtail the number of my colonies. I never expected to be able to melt so many

combs in so small an extractor, but I have made such progress that we shall try to finish the job without the large machine, as I intended. I think that, in making a large machine, I would have the pan square or oblong, with only the highest side made sloping to reflect the sun's heat, as, by the aid of the revolving stand, the machince could easily be kept facing the sun. The advantage of the oblong pan would be in more easily making the glass cover. However, a 20-inch dishpan will make an extractor large enough for most bee-keepers' use.

Forestville, Minn., Aug. 13. B. TAYLOR.

[A detailed description of how to make this extractor, as above illustrated, is given in our August 15th number, page 634.]

LANGDON NON-SWARMING DEVICE.

Your welcome favor of May 29th from Switzerland was received in due time, and now that I have had the present year's experience and the benefit of the few reports that I have received from those using them, I will make a report to you about the non-swarmer. You have my thanks for the manner it is shown in the *B. B. J.*, and for the information and advice in your last letter.

I regret to say that the non-swarmer does not do for me just as well as it did last year. How much this depends on a difference in the season is hard to tell. There has been some swarming, a small per cent, from the sixty non-swarmers in operation in my house-apiary, and I find from my experience, and the few reports from those using them this season, that there are at least three points that it will not affect; viz., once in a while a queen is killed, and hatching cells make some trouble afterward. If the queen is old and the bees try to supersede her, they will build cells in the closed hive; and then if it is opened soon after she will lead out a swarm. This can be stopped by keeping all queens in their prime, as all bee-keepers ought to do. Also, it is known that they will sometimes swarm with only eggs in the queen-cells that they leave. Running so many bees into the same hive seems to encourage this extreme of the swarming fever, and it has been done more frequently with the non-swarmer in place than before. To what extent shading the hives would help this is yet to be seen. Also, there might be a great difference in races of bees as to that point. I have only Carniolans, and so can not tell about the Italians yet.

These are exceptions; but they may stand in the way of having the plan largely adopted by those who can make self-hivers a success, or those who can care for their bees in swarming-time. I have over 500 on trial in different parts of the country this season, and will know more about its success before long. I can make it of important use to me in my house, even as it is now, and have set the ball rolling, so that if there is any possible way to bring it to absolute perfection the way is clear and a good track laid.

It was late in the season before the non-swarmers were put on the market, and for that reason may be explained the failure of some; but I made one mistake in instructing them to make the change of bees and cases from one hive to the other once in seven days instead of not over five. A natural queen-cell hatches at an average of nine days. Now, if the bees have the swarming fever *very badly*, and start a cell from a larva just hatched from the egg, or one day older, they can seal it and swarm on the fifth or sixth day if they start it the same day they are turned into the other hive. I think that is where the most of the failures lie, and that by a careful working-up of these points, and not taking too much for granted (as I am afraid I did last year) the plan will finally be brought out so that it will work with but few exceptions.

Thanking you for your kindness, and hoping to see this plan help all the bee-keeping fraternity, I am yours truly, H. P. LANGDON.

East Constable, N. Y., July 20.

—*British Bee Journal, August 10, '93.*

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

GARDENING FOR SEPT. 1, IN A DRY TIME.

Well, friends, I have not any thing very encouraging just now; and, to tell the truth, I am afraid I have been losing enthusiasm. The drouth continues, and almost every thing is at a standstill. It is true, we have had local showers; and about once in ten days we have had rain enough so the water would run down the roadsides—that is, where the roadsides were favorable. But not one of these showers seems to have got down to the roots of the plants. Push a spade into the ground, and the dry dust comes up every time, even immediately after a shower. I suppose the showers do some good, and very likely we are better off here than the folks in some other places. We have no lack of water for man and beast, and we have *some* to spare for irrigating; but what perplexes me most is, even the use of water does not seem to work as it ought to. There is plenty of manure, and the weather is warm enough, sure. But even when we put on the water without stint, a good many things do not grow as I want them to. For instance, we put out a lot of celery, and used a hundred barrels of water to wet the ground up thoroughly. The plants do not grow; and when I dig into the rows to fill up vacancies, I find the ground almost as hard as a brick, where I put the water. Why, before planting it was worked up as fine and soft and deep as any one could wish. Perhaps the result was owing to the fact that I did not throw some dry earth over the surface where the water had been applied, as I usually do. I felt sure it was going to rain, and perhaps this is one reason why we have not used more water. The use of water on the strawberry-beds has worked nicely. We have filled all our orders with nice strong well-rooted plants. I only hope the friends who received them have had water to keep them growing.

Now, there is a big moral to look after right here. Gardeners are becoming discouraged by the wholesale—or, perhaps I should say, the *young* gardeners are. The old veterans have learned better. We want to keep right at work, and we can prepare the ground and sow spinach now. We want to sow seeds of lettuce for plants just right for forcing under glass, and we want to put out plenty of seeds for cold-frame cabbage-plants. Remember how much cold-frame cabbage-plants were worth last spring, and nobody had any. Sow rye on all your vacant ground. Why, my 47 bushels of rye to the acre that has nearly all been sold at 65 cts. a bushel (taking out the price of bags) has been a more profitable crop than much of my market-garden stuff. A general scarcity and a general abandoning of the business only means big prices for those who have something to sell when there comes a great demand. We are getting excellent prices for what we have to sell, even now; and wax beans, lima beans of all kinds, and several other vegetables that stand drouth, are yielding quite a fair crop that

sells at excellent prices. Now, mind I tell you to look out that you do not "get left," and let some other fellow make a "big thing" while you are only standing and looking on. Remember the prices we paid for clover-seed, pork, and —oh dear me! I almost forgot to mention potatoes. They are worth a dollar a bushel here in Medina, and not very nice ones at that; and who knows what they will be between now and a year from this time?

TOBACCO COLUMN.

CONDITIONS UNDER WHICH WE GIVE SMOKERS TO PERSONS WHO STOP USING TOBACCO.

First, the candidate must be one of those who have given up tobacco in consequence of what he has seen and read in this department. Second, he promises to pay for the smoker should he ever resume the use of tobacco in any form, after receiving the smoker. Third, he must be a subscriber to GLEANINGS. Any subscriber may, however, have smokers sent to neighbors or personal acquaintances whom he has labored with on the matter of tobacco-using, providing he give us his pledge that, if the one who receives the smoker ever uses tobacco again, he (the subscriber) will pay for the smoker. The one who receives the smoker in this case need not be a subscriber to GLEANINGS, though we greatly prefer that he be one, because we think he would be strengthened by reading the testimonials from time to time in regard to this matter. The full name and address of every one who makes the promise must be furnished for publication.

M. Peden has quit the use of tobacco, and says if you will send him a smoker he will not use the weed any more. If he uses it again I will pay for the smoker. H. PEDEN.
Perdue, Tenn., May 27.

One more county heard from. Mr. O. A. Hend wishes you to send me a smoker for him, as he has quit tobacco, and ordered five Dovetailed hives of J. M. Jenkins, through me. I will pay for the smoker should he ever use the weed again. WM. B. ENOCHS.
Eupora, Miss., May 27.

Six years ago you sent me one of your smokers on the tobacco pledge. I have never used tobacco since, and I think I have saved over $200 by so doing, besides ridding myself of a filthy habit. M. E. HOLMES.
Indianola, Neb., May 22.

I received the smoker in good shape, and will say that, if I ever use tobacco again, I will pay for the smoker. My father also keeps bees; he said that, if you would send him a smoker, he would never use tobacco any more.
Quebeck, Tenn., May 27. C. H. STEWART.

I see you offer to give any one a smoker who will quit tobacco. I saw it this morning in GLEANINGS. I pledge to you that I will never use tobacco any more. If you are willing to send me a smoker you can do so. If I use tobacco any more I will pay for the smoker.
Quebeck, Tenn., May 21. C. H. STEWART.

Please send Mr. Frank Jackson a smoker. He was as much of a slave to tobacco as a man ever gets to be, but has quit, and I think he deserves a reward for it. If he takes up the habit again I will pay for the smoker. He is a new bee-keeper, and has hardly gotten a start yet. L. L. NEYLAND.
Berwick, Miss., May 7.

I received your letter a few days ago in regard to that smoker as a pledge. I can say that I am a subscriber to GLEANINGS, and have been induced by its readings to give up tobacco; and if I ever use it again I will pay for the smoker. T. A. CHAMBERS.
Bartlett, Iowa, July 23.

I send you the name of Rev. J. A. Patton, of Cherokee, Ala., who has quit the use of tobacco. Please send him a smoker. If he ever commences again I will pay for the smoker. Mr. P. is a bee-keeper, and uses Dovetailed hives from friend Jenkins. G. E. GEISE.
Dickson, Ala., June 3.

Find 70 cents inclosed to pay for the smoker you sent to O. Goodmensen for a pledge. He has commenced smoking again, so I send you the price of a smoker, as I agreed to. He said the mosquitoes were bad, and that he had to keep them smoked out of his face.
Jewell, Fla., July 27. A. J. HUSKEY.

We all think a great deal of GLEANINGS, and think you are very liberal in offering a smoker to those who promise to quit tobacco. One of my aunts, Mrs. T. R. Pearman, wishes to take advantage of your offer, and promises to quit smoking if you will send her a smoker. If she doesn't I'll pay for it. D. B. THOMAS.
Odin, Mo., April 21.

I have two friends who have been keeping bees for three years. They both used tobacco, but promised me to stop the use of it. They have not used any in six weeks. I want you to send them a smoker apiece; and if they ever use tobacco again I will pay you for them. Their names are T. A. McBride and S. Anderson, both good men. J. J. KEITH.
Louisville, Ga., May 24.

A friend of mine, G. W. Bouher, Boyd, Ky., has signified his intention of quitting the use of tobacco; and after looking over the Tobacco Column, and seeing your advertisement promising a smoker to all who quit, he asks that I have one sent to his address. He promises that, if he ever begins the use of the weed again, he will pay for the smoker; but in case he should fail to do so I will remit the price of the smoker; but you need not fear. I think he is fully converted. H. C. CLEMONS.
Boyd, Ky., May 16.

After reading GLEANINGS concerning tobacco, etc., and being appointed teacher over the Bible class, I was sickened, whipped out, today. I went into the church, and there I was chewing and spitting on the floor. I looked down and beheld myself as I never did before, and I have made a pledge to quite tobacco, and I made it before my good wife. If you will send me a smoker I will keep it as the fruits of my pledge; and if I ever begin to use it again I will pay you for the smoker.
Rover, Ark., May 4. A. J. ALLEN.

HOW TOBACCO KILLS.

We clip the following from the *Farm, Stock, and Home:*

It is said that tobacco smoke will kill grubs in sheeps' heads. Quite likely, for it killed a neighbor girl's regard for a cigarette-smoking beau.

KIND WORD FOR GARDEN SEEDS, ETC.

The garden seeds I got of you in the spring were the best I ever planted. They came quickly and grew rapidly. The Grand Rapids lettuce made me enough alone to pay for all my work. May God bless you, and spare you among us for the good work you are doing, is my prayer.
Alexandria, Ind., July 7. E. E. EDWARDS.

[Friend E., it troubles me to get such very kind words from you and others as the above concluding sentence; and the reason why it troubles me is because it brings up again and again the feeling that I so poorly deserve them.]

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
32 PAGES 7×10
$1.00 PER YEAR

For a small moment have I forsaken thee; but with great mercies will I gather thee.—ISA. 54: 7.

WE do not very often introduce choice bits of poetry at the head of our editorial columns; but the following, from the *New church Messenger*, is so unique that we can not forbear giving it place here:

As I sat a-dreaming,
And thought the world a-seeming,
With nothing true
Or old or new,
A little bee flew nigh me,
And buzzed as he went by me:
"Up! up and do!
'Tis such as you
That makes the world a-seeming."

WE have on hand an article from one of our correspondents, who pronounces the Langdon non-swarmer a *perfect success*. We will try to give it in our next issue.

AT just about this time of the year, propolis acts the meanest. It is more or less sticky, and decidedly tenacious. There is one thing comforting—at other times it gives but very little trouble. Indeed, even our Hoffman frames with the V edges work nicely even now. That V edge works all right, even if theory does say no.

IN the department of Replies to Questions, in the *American Bee Journal*, it is asked whether self-hiving arrangements are a success. With three or four exceptions the respondents vote against them. With only one exception, those who vote adversely have not tried them; and with one exception, again, those who have tried them vote in their favor.

VOLUME I., Nos. 1 and 2 of the new series of the *Canadian Bee Journal*, are on our desk. In the make-up and general selection of matter, and in the printing, there is quite an improvement over the old journal. There is a good field for a bee-journal in Canada, and we see no reason why one should not be made, under the present management, a decided success.

WE have so improved the Crane smoker that it is giving great satisfaction in our apiary and in others. If any of our customers have purchased some of the earlier smokers, and they do not work, we hope they will kindly send us by mail the check-valve chamber, and we will remodel and return it without cost, so as to make their smoker a "thing of beauty and a joy for ever."

THE biographical department of the *American Bee Journal* has been maintained vigorously for over a year now, and in every issue of the weekly. We thought, some three or four years ago, that we had "done up" pretty nearly all the prominent bee-keepers; but new ones are coming to the fore, and it is a pleasure to make their acquaintance. Brother York is a good introducer.

WE notice from our upstairs office windows small festoons of bark-lice on thrifty growing basswood-trees, a few feet distant; and on the sidewalk beneath there are little drops, or, rather, spots of stain that look exactly like the drops of honey-dew or exudations from the plant-lice, so noticeable on the walks in 1884. Strange as it may seem, little or no honey-dew is getting into the hives. Very possibly it is an off year for plant-lice. We sincerely hope it is. So far we have had no reports of the bees gathering honey-dew anywhere in the country, although we have seen on the bushes and trees an unusual number of plant-lice up to date in our locality.

STRAY STINGS is the title of a new department in the *American Bee Journal*. The title might lead one to expect something caustic or disagreeable. On the contrary, it is very pleasant. Here is a sample of one of them:

It has long been supposed that millers grind out flour; but the Miller of GLEANINGS reverses the operation and grinds out straws. If the good doctor had got a little further down in the straw he would have been able to use roots in his gristmill. It is a long way, comparatively speaking, from the head of the straw to the roots, and, perhaps, the doctor chose the medium instead of the extremes, at the same time hoping to work toward the ends. If this be so, we should like to know which he proposes to grind first--the Roots or the Heads of Grain.

WE find the following in the last issue of the *American Bee Journal:*

Mr. J. T. Calvert, the most excellent son-in-law of A. I. Root (and also manager of their great bee-supply business in Medina, O.), recently paid Bro. Holtermann and the *Canadian Bee Journal* a visit. Mr. Calvert was on a bicycle tour, taking in the glorious Christian Endeavor convention at Montreal, Quebec. We shouldn't be surprised to hear that Mr. Calvert, with Bros. A. I. and Ernest Root, were going to the World's Fair on their wheels, as they are all expert bicyclists. If they do, we'll agree to wheel into line our best and truest—welcome.

Many thanks, Bro. York. We extend our grateful acknowledgments; and if, indeed, we should go on a wheel, one or all of us, we should be very happy indeed to have you wheel in line with us. By the way, we have kept in line in apicultural matters so far, and may we continue to do so.

BRO. HUTCHINSON, of the *Bee-keepers' Review*, is finding pleasure and delight in the camera. We doubt not that, later on, he will find profit also. Very recently he sent us a very pretty photo of "Baby Fern," taken by himself. As we admired the picture the camera fever seized us, with the result that we took several pictures of the babies of Rootville. We were almost tempted to have the picture of Mr. H.'s last baby reproduced in half-tone, and present it to our readers. But then we thought that, perhaps, we might be taking a little too much liberty.

By the way, we are about to start into something in the line of biographical pictures. Instead of showing only a view of the *pater familias*, or the principal bee-keeper, as formerly, we propose showing the whole family of a few prominent bee-keepers who will give their consent. In our next issue we will present the apiary and members of the family of Mr. F. L. Snyder, of Orion, Wis. This will be followed later by a view of the Atchley family, every one of whom is a bee-keeper.

WOODEN VERSUS WIRE-CLOTH PADDLES FOR KILLING BEES.

IN another column friend Doolittle seems to give the preference entirely to the solid wooden paddle for killing those cross bees that will persistently follow the apiarist about for hours at a time. In one of his comments, made a year or so ago, in answer to an item in the A B C

book, on the subject of cross bees, friend Doolittle wrote:

I carry a paddle, made of wood and wire cloth, in my work-box; and if any bee insists on following me two rods from its hive, I always kill it with this paddle, and thus my apiary is always kept free from angry bees. The wire cloth is inserted in the center of the wood, so as to allow the air to go through the paddle, thus making sure of hitting the bee every time, instead of blowing it on one side, as is often the case where only solid wood is used.

From the above it would seem that our friend has changed his mind. That's all right; we do it ourselves sometimes. Now, we have tried both the solid wooden and wire-cloth paddles—the wire cloth itself being reinforced at the edges by a rim of heavy wire. The latter, in our hands, proves to be much more effective. It hits the bee every time without fanning, and, so far as we can remember, it makes a pretty sure job of killing. We made quite a lot of them for use at the candy-stands at our county fair, giving one to each stand, with instructions to kill the first bee that came around; and you will remember how, last year, we reported that the plan was a complete success. With the wooden sticks and paddles we used to give them, they were quite sure to only fan the bee—possibly receive in return a sting for their misdirected effort. Now, Mr. Doolittle, have you not been a little too hasty in giving up a good thing?

When we want to make a wholesale job of it, we simply clap a couple of boards together, about as one would a pair of cymbals; and as soon as every last bee is killed, peace reigns for a while. But when we desire to kill only an *occasional* bee, a wire-cloth paddle, in our estimation, is ahead of every thing else. Now, either friend Doolittle has lost the knack of killing bees with the wire cloth or else he has forgotten what he wrote above; for, observe, he said, "I *always kill* it with this [wire-cloth] paddle." Italics are ours.

THE BOARDMAN SOLAR WAX-EXTRACTOR; HOW IT WILL SAVE MONEY FROM "STUFF" USUALLY THROWN AWAY.

We have been saving up for several months past the refuse from the wax-rendering from our wax-room, until we have now an accumulation of several barrels. By any process by which we may treat it in the wax-room, even by sulphuric acid, we can get no wax out of it. It seems, in fact, to be nothing but dirty dirt. Very recently we set up one of the Boardman extractors, placed a few shovelfuls of this stuff in it, spreading it evenly over the bottom of the machine. The results were astonishing. At the present rate we shall get a large quantity of wax of beautiful color, of what could not otherwise be obtained by any mechanical means indoors. Indeed, from our four or five barrels of dirt we shall get, at the present rate, about half a barrel of beautiful wax; and with this style of extractor the labor of shoveling the stuff into the wax-extractor and removing the residue after the wax has been extracted, is very small indeed. We are coming to the belief that the solar wax-extractor does its work the most thoroughly of any method of refining known. The first few times we tried the Boardman it did not seem to do the work satisfactorily; but we now know that it was because we thought we could make a "slight improvement" on his machine. It will be remembered that the bottom of his tray is simply made of matched stuff—that is, narrow strips of lumber tongued and grooved like flooring or ceiling. Well, our improvement consisted in covering this flooring with tin, but its bright surface reflected back so much of the sunlight that we actually lost considerable heat, and really spoiled the practical working of the machine. The last time we visited Mr. Boardman we were reminded that the bottom of his extractor consisted principally of matched stuff, and we began to think that was really the reason why his worked so nicely. Soon after arriving home we put out an extractor exactly as Mr. Boardman makes his, with the result above mentioned. Lest some may have forgotten how the Boardman is made, we will simply state that it is a large wooden tray, made entirely of wood, 4 or 5 in. deep, and about 3 by 5 feet. An ordinary hot-house sash may be used to cover, but we find it very much better to use one large glass. Glass is now made so cheaply in large sheets that it adds but a small amount to its cost, and considerable to the effective working of the machine, because the ordinary sash *bars* make shadows, along which the wax fails to melt. If you do not wish to make a Boardman solar wax-extractor, you can obtain one at the Home of the Honey-bees for $6.00. We shall soon put in use some four or five of them. Indeed, every foundation-maker will find that their use will many times make up for their first cost. They will likely earn for you in one day $10.00 from dirt that would otherwise be turned over to the garden as just so much fertilizer.

HOW TO TAKE AWAY THE DISPOSITION ON THE PART OF THE BEES TO ROB AFTER THE HONEY-FLOW.

Every summer, after a honey-flow and during the early part of the fall, we have been troubled greatly by robbers. As is well known, our apiary is run almost exclusively for conducting experiments, rearing queens, and raising choice bees. This requires the almost incessant opening of hives; and the result has been, that robbers have bothered us continually—so much so that many days we have been obliged to discontinue work. This year we have not been bothered at all; and it is not because nectar has been coming in in small dribs right along, but because we have discovered a way of keeping the robbers busy.

Nearly a year ago we described in our issue for Oct 15, page 782, our method of transferring, and, in connection with it, how to get extracted honey from the old crooked combs, without an extractor. The latter was accomplished in this way: Old combs containing much or little honey, that were crooked or otherwise undesirable, were placed in four or five hive-bodies, said bodies being stacked up in one tier four or five high. A wire-cloth screen* was placed on top, and shaded; and an entrance at the bottom was contracted to a space sufficient to admit one or two bees at a time. As it took the bees some little time to get in and out of the hives, to say nothing of the time of crawling up and down the combs, no robbing was induced. The very thing that will get an apiary in an uproar is, to let the bees get a large quantity of honey at a time. But if, on the contrary, the bees can get the honey very slowly, about as they would from natural sources, nothing unusual is apparent in the apiary; and, on the other hand, the undesirable combs are emptied and cleaned up. Having bought quite a number of colonies in the spring, we had quite a lot of just such combs, all containing more or less honey. We stowed these away until the honey-flow, when they were put in tiers of four of five hives, as described above. Our purpose *at the time* was simply to get the honey out of them. But, incidentally, we stumbled on to something more

*This is necessary to prevent the bees from smothering while in the hive.

valuable than this; namely, that the apiary, during all the time that bees were working in these hives, showed no signs of robbing. Indeed, for the last two months we have been able to open the hives just as we did during the honey-flow, without a single robber poking its nose around to investigate. Those that would otherwise be robbers, and make much annoyance, seem to be occupied in getting honey out of the stacked-up hives. Incidentally also we discovered another decided advantage. We found we could introduce queens from queen-cells, and do every thing else, in fact, as easily and successfully as during a nice moderate honey-flow; for it is a well-known fact that bees will accept queens and queen-cells much more readily during a time when honey is coming in than at a time when none is coming, and when robbing seems to be the order of the day. This discovery has been worth to us many dollars. Dr. C. C. Miller was the first one to give us the idea of letting bees rob quietly in this way; but he did not then anticipate how many valuable results would grow out of it.

By the way, did it ever occur to you, dear reader, how much of an experimental apiary ours has come to be? We are constantly testing new ideas and inventions, and reports from the same are being given in nearly every issue. The most valuable thing this summer that we have come across is a perfect working scheme for keeping the bees quiet during a dearth of honey, thus rendering a bee-tent and other things unnecessary, and work in the yard pleasant and profitable.

In another column it will be noticed that the reports *dis*couraging are more numerous than the reports *en*couraging. The exceedingly dry weather has rather put a quietus on the usual late honey-flow; but the reports discouraging, it will be noticed, apply to territory where the seasons have been poor, and have been so reported along with the reports encouraging when he scales turned the other way.

DIRECTIONS FOR USING MERCURIAL AND ANEROID BAROMETERS.

We have had a lot of these printed, and will mail them free of charge to any one who will send us a stamped envelope directed to himself. As it is all printed matter, a one-cent stamp will be sufficient. They will apply to the barometers we have sold, or to any mercurial or aneroid barometer. Please take notice, however, that they have no reference to a cheap kind of glasses that have been sold by agents all over the country. What I mean is, some sort of powder dissolved in a liquid. When it is going to rain, the liquid becomes cloudy—at least, that is what the directions say. A true barometer records the pressure of the atmosphere; and, in fact, it can be used to tell the altitude of a hill or mountain as well as to foretell the weather. If you go up a high mountain, of course there is not so much air above you, so the pressure is less. The aneroid barometers work on the same principle as the mercurial, except that the scale is, for convenience, made in the form of a circle. Please keep in mind that, when we use the term "high barometer" or "low barometer" we mean high or low *pressure*. The average pressure, but little above sea-level, is about 29 inches; therefore, when the indicator moves toward 28 inches we mean "down." When it moves toward 29 or 30, it means "up." I mention this, because, unless you look at the figures on the aneroid, you may get confused, because sometimes the hand is really going down when the mercury in the mercurial barometer is going up.

THE BEE.

Oh the bee! the bee! the honey-bee!
He's just the fellow I like to see.
His life is gay as the day is long,
And overflows with a flood of song;
He bathes in the dew of a new-born day,
And revels like schools of children at play.

Oh the bee! the bee! the honey-bee!
A marvelous creature is he to me.
I watch him often with raptured eye
As he wends his way and blends with the sky;
He flies to the fields, and, lo! he dips
His tiny bill in the drop that drips
From the clover-blossom's laughing lips;
And he leaves a tune and he leaves a kiss,
But he takes a globular world of bliss.

Oh the bee! the bee! the honey-bee!
It teaches a truthful lesson to me.
Patiently toiling from day to day,
Wearing by little a life away;
Each load you gather, each drop of sweet
You lay in store for others to eat—
Yet, uncomplaining, you toil along,
Rejoicing in labor and filled with song.

Oh the bee! the bee! the honey-bee!
God's wisdom is manifest plainly in thee.
And may we ever be steadfast and true,
Devoting *our* lives to the good we can do;
For the world is a meadow of sweet-clover bloom,
And we, like the bee, have plenty of room
To gather the nectar of kindness and love
That drops like the dew from the heavens above.

Alexandria, Ind. Evan Ellery Edwards.

CONVENTION NOTICE.

THE COLUMBIAN MEETING OF THE BEE-KEEPERS OF NORTH AMERICA.

The North American Bee-keepers' Association will hold its 24th annual convention on the 11th, 12th, and 13th of October, 1893, in Chicago, Ill.

Place of Meeting.—A hall for the use of the convention has been secured in the "Louisiana Hotel," at the corner of 71st Street and Seipp Avenue, only a few minutes' walk from the south entrance to the World's Columbian Exposition. This hall is large, well lighted, and in a quiet place.

Hotel Accommodations.—The Louisiana Hotel itself will furnish comfortable accommodations to a large number of the members, at very moderate prices. For a small room two persons pay daily 75 cts. each. Larger rooms occupied by two at $1.00 per person. Four persons occupying a room having two beds will pay 50 cts. each. Meals can be obtained in the hotel at reasonable rates, or at numerous restaurants in the vicinity. It is best to engage rooms by letter beforehand. The proprietors of the Louisiana Hotel give us the use of the hall free, expecting that many of the members will take rooms with them; and as the prices are moderate, and the rooms are neat and convenient, it is but just for all who can well arrange to stop there to do so. For this purpose, address "Manager of Louisiana Hotel, corner 71st Street and Seipp Ave., Chicago," stating what priced room is wanted.

Railway Tickets and Baggage.—Most of the railways ticket to the Exposition Depot, near which the Louisiana Hotel is located; and baggage should be checked to that station, thus avoiding extra charges, as it is about seven miles from the city stations to the World's Fair grounds. Information as to rates of travel, time tickets are good, etc., can be obtained of all local ticket agents. From many points—especially from cities having numerous competing lines—excursions will be starting which will permit those who can take advantage of them to go and return at the usual rate for one fare.

Programme and Attendance.—The programme, of which further notice will be given, consists of interesting papers by well-known specialists, and discussions of topics which will interest honey-producers, queen-breeders, manufacturers of apiarian supplies, publishers and editors of bee-literature, and dealers in honey and wax. Viewing the various foreign and home exhibits in apiculture at the World's Fair will form an attractive and instructive feature of the meeting, and the number of apiarists widely known here and abroad who will be present and take part in the proceedings is of itself a guarantee that this will be a highly interesting and enthusiastic meeting. Counting, therefore, upon a large attendance, the Executive Committee of the society has made arrangements accordingly. Let every State in the Union send the strongest possible delegation, and let every branch of our industry be represented at this great Columbian gathering. No other occasion is likely to occur in our generation when so much of interest can be seen and heard at the time of one of these meetings; and it is earnestly hoped that a much larger number of the bee-keepers of North America than has ever met at any previous convention will be able to avail themselves of this grand opportunity. A special invitation is extended to the bee-keepers of every foreign country.

Notice of Attendance or of Presentation of Papers.—The Secretary is desirous of obtaining, as early as possible, the names of all who contemplate being present. Kindly notify him by card or letter; also any who may wish to present papers

the titles of which have not yet been handed in, are requested to send to the Secretary at as early a date as possible the exact title and a very brief abstract of the article, which will enable him to assign the topic its proper place in the programme.

FRANK BENTON,
Secretary North American Bee-keepers' Association,
U. S Department of Agriculture, Washington, D. C.

SPECIAL NOTICES.

WINTER OR EGYPTIAN ONION-SETS.

Until further notice we will fill orders at the following very low prices: 12 cts. per quart; 75 cts. per peck; $2.50 per bushel. If wanted by mail, add at the rate of 10 cts. extra for postage.

AMERICAN PEARL ONION-SETS.

We are expecting daily our first shipment. Prices will be, pint, 15 cts.; quart, 25 cts.; peck, $1.75; bushel, $6.00. If wanted by mail, add 10 cts. per quart extra. There has been so much discussion in regard to these that we need not go over it again this year. In our locality we have for three seasons had nice crops from sets put out in September. We shall plant them again largely this season. From the number of orders that are coming in, I presume a great many of our customers have, like ourselves, succeeded with them.

HONEY MARKET.

We find that while, in most places, a good honey crop has been secured, there are many places where there was little or no honey gathered; consequently there is a good demand for honey in these localities as well as in the large centers. Except for the general financial depression caused by hoarding on the part of the people generally, the honey market would be much more active, and prices better sustained. There is a tendency, however, toward lower prices, when they are already as low as they ought to go to bring any profit to the producer. We have already disposed of one carload of sage honey from California, as well as two or three tons of Ohio and Michigan honey, comb and extracted. Almost all the honey we have sampled so far this season seems to be superior in quality. We offer choice white comb honey in 1-lb. sections, in 12 and 24 lb. cases, crated so as to go through by freight safely without breakage, in lots of 100 lbs. or more, at 16c per lb.; smaller lots, 17c. Choice extracted clover honey, in 60-lb. cans, two in a case, 8½c per lb.; lots of two cases or more, 8 cts. per lb. Write for prices on lots of 1000 lbs. or over.

KIND WORDS FROM OUR CUSTOMERS.

I am well pleased with the Crane smoker. I think it a noble one, but rather too heavy. G. W. REAMS.
Franklin, Tenn., July 21.

I believe I get more orders through GLEANINGS than any other journal I advertise in.
Steeleville, Ill., July 22. CHAS. H. THEIS.

I received my goods in splendid order some time ago, and am much obliged. GEO. H. SAYERS.
Montague, Mich., July 3.

My potato-eyes all grew, and are looking very nice; and the Stratagem peas—why, I never saw the like—such pods, four inches long! I will save every one for seed. MARY MOFFATT.
Glidden, Ia., July 20.

I have taken GLEANINGS 11 years. It is worth more than it cost, even if one had no use for the bee part of it. The various travels are excellent, and the Rambler is a bonanza of himself. Dr. Miller is the seasoning of the cake, and a host more of them make up the foundation. Long may it live.
Cuba, Ill., July 8. M. W. MURPHEY.

THE NEW CRANE SMOKER.

I put on the valve that you sent me. The old one was shriveled up, but I tried the new one the 29th, also to-day. I have had it in constant use for eight hours, and I can not see but it works just as well as when it was first put on. In short, I will say I think, all points considered, the new Crane smoker is the best I ever saw, and I have used nearly all of them. C. H. AUSTIN.
Allen, Mich., July 31.

I received those labels in good shape. I am very much obliged for being so prompt in filling the order. I was more than surprised when I went to the postoffice and found them there. I would advise any one who produces comb or extracted honey to send to A. I. Root for one of his honey-label catalogues, and be surprised. R. R. WELSH.
Portage Creek, Pa., July 31.

AN A B C SCHOLAR'S SUCCESS.

Inclosed find $1.00, for which please send me GLEANINGS. About three years ago I bought your A B C book and a swarm of pure Italian bees, and had four or five swarms of other bees, said to be Italians, and now I have 30. They are the strongest of swarms. I have had the grandest kind of success, and I want to give you all the credit, for I went according to your instructions—bought my supplies of Nysewander. I have done so well that I am going to let my farm next year and give all my attention to my bees. I expect to take in $100 this year for bees and honey. I am taking off the supers now that are filled with the most beautiful white-clover honey, all capped over. P. H. MORRIS.
Webster City, Ia., July 20.

Mr. Root:—Friend James, of Gordon, N. S. W., has been taking prizes for his tomatoes and other vegetables wherever shown this year, and he "blames" your seed for it. Well, I also want to take some prizes next year, and so am sending to you for a small assortment of seed. I wish the "boss printer" had followed your suggestions in the March 15th number (I think that was the date) to condense the catalogue and publish it, as I do not know what to order.

GLEANINGS is fully appreciated here. The only fault we find in it is, that it is so long between the numbers, and that the "High-pressure Gardening" column is so short. That column alone is worth the subscription.

Please send the seeds by return mail. I shall get them in time for our spring in this part—September. I shall have a J. W. Day calico frame ready for them when they arrive. HERBERT J. RUMSEY.
Boronia, Barber's Creek, New South Wales.

KIND WORDS FROM CALIFORNIA, AND A GOOD HONEY REPORT AS WELL.

Friend Root:—Proceed with your blessed religious talk. It doeth good like a medicine. It does good even to those who sneer and ridicule and say, "foolish" and "silly" and "superstitious." Even they, in the still small hours, will think and ponder, and say, "Perhaps Mr. Root is right;" and if it does not do him a vast amount of good, certainly it does not seem to hurt him any. Proceed, Bro. Root, as I know you will any way. My father, Oliver, went to Mantua, Portage Co., Ohio, in 1805, where I was born in 1828. There were Roots in Mantua, but I was young when we left there. Myself and sons have often sent to you for goods—always been satisfied, I believe. I have kept a few bees for many years. I have two colonies now, from which I took 200 lbs. this season. Mr. Holly, 50 rods from me, took 15 to 16 tons, from about 200 swarms. Mr. Kenny, a mile away, has between 100 and 200 colonies, and says he is getting rich this year. Mr. McIntyre, 2 miles from here, has still more bees and is doing well. I forgot how well. This is a prosperous season for bees in this locality. Throughout the State, however, I think the result is only fairly good. Our season is now over. Bees are working on other plants than the sage, and the honey is inferior. The first of the honey is unusually good. In Santa Barbara, where I kept bees 15 years, the honey season continued till October, bees working in the numerous flower-gardens of the city, often working on tarweed, with the result of excessively bitter honey. In parts of Santa Barbara County honey is usually very good, but scarcely up to the Ventura Co. sage honey. According to a printed statement now before me, Mr. Archer, in 1876, near Santa Barbara, increased one swarm to 36, and took from it 1576 lbs. of strained honey, and 65 lbs. comb honey. I am well acquainted with Mr. Archer, and consider him reliable, but there may be some mistake somewhere. It seems almost incredible. S. P. SNOW.
Fillmore, Cal., July 18.

Bingham Perfect Smokers.

CHEAPEST AND BEST ON EARTH.

Patented 1878, 1882, and 1892.

The Doctor, 3½-inch stove, largest smoke and fuel capacity made, $2.00; Conqueror, 3-inch stove, $1.75; Large, $1.50. Postpaid per mail. They all have wide shields, movable bent nozzle, coiled steel wire handle, and inverted Bingham bellows, with Bingham cleated joints. Perfect in principle, perfect in detail, and 14 years the standard in every country.

The Bingham & Hetherington uncapping-knife also belongs in the Perfect series; $1.15.

Original, Unimproved Bingham Bee-Smokers.

Our smaller smokers are as we have always made them. Little Wonder, narrow shield, 1¾-inch stove, 65 cts.; Plain, narrow shield, 2-inch stove, $1.00; Extra, 2-inch stove, wide shield, $1.25.

They are a great convenience in handling the cone and smoke. We can recommend it to all bee-keepers as being just the thing.—QUEIN & FYKE, Ettawanda, Cal.

The best to be had.—C. J. DONALDSON, Lapeer, Mich.

As perfect as need be.—H. M. SEELY, Harford, Pa.

It is just what I wanted.—J. C. KEITHLEY, Shacklefall, Mo.

They are a desirable attachment.—WALTER S. POUDER, Indianapolis, Ind.

I would almost as lief do without the smoke as without the attachments.—HENRY F. HAGEN, Rocky Ford, Col.

To sell again, or rates or circular, send card to **T. F. BINGHAM, Abronia, Mich.**

FOR ALL KINDS OF BEE KEEPERS SUPPLIES. ADDRESS LEAHY MFG. CO. HIGGINSVILLE, MO.

In writing advertisers please mention this paper.

DOVETAILED HIVES, SIMPLICITY HIVES,

SECTIONS, EXTRACTORS, ETC.

FULL LINE OF

BEE-KEEPERS' SUPPLIES.

60-PAGE CATALOGUE. 1tfdb

J. M. JENKINS, WETUMPKA, ALABAMA.

☞In responding to this advertisement mention GLEANINGS.

ONCE MORE we are up with orders for our

Golden Italian Queens

that have given such general satisfaction. If you want the best, send in your orders. Single queen, $1; six for $4 50. Circular free.

CHAS. D. DUVALL, Spencerville, Md.

☞In responding to this advertisement mention GLEANINGS.

OTTUMWA BEE-HIVE FACTORY.

Bee-keepers, look to your interests. Every thing in the line of bee-supplies constantly on hand. Price list free. **GREGORY BROS. & SON,**

1-23c Ottumwa, Ia. South side

☞In responding to this advertisement mention GLEANINGS

Read what J. I. PARENT, of CHARLTON, N. Y., says—"We cut with one of your Combined Machines last winter 50 chaff hives with 7-inch cap, 100 honey-racks, 500 broad frames, 2,000 honey-boxes, and a great deal of other work. This winter we have doubled the amount of bee-hives, etc., to make, and we expect to do it all with this saw. It will do all you say it will." Catalogue and Price List free. Address W. F. & JOHN BARNES, 545 Ruby St., Rockford, Ill.

When more convenient, orders for Barnes' Foot-Power Machinery may be sent to me. A. I. ROOT. 23tfd

Bee-Hives.

Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue 23 22db

W. H. PUTNAM, River Falls, Pierce Co., Wis.

VANDERVORT COMB-FOUNDATION MILLS.

Send for samples and reduced price list.

1tfd **JNO. VANDERVORT, Laceyville, Pa.**

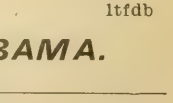
For new price list of

PURE ITALIAN BEES AND QUEENS, AND WHITE AND BROWN FERRETS, ADDRESS

N. A. KNAPP,

ROCHESTER, LORAIN CO., O.

Please mention this paper. 4tfdb



Muth's Honey-Extractor.

Square Glass Honey-Jars,

Tin Buckets, Bee-hives.

Honey-Sections, &c., &c.

Perfection Cold-Blast Smokers.

APPLY TO

CHAS. F. MUTH & SON, Cincinnati, O.

Send 10-ct. stamp for "Practical Hints to Bee-keepers." Please mention this paper.

TAKE NOTICE!

BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH,

14tfdb New London, Wis.

READY AGAIN!

My location enables me to rear those nice Golden Queens, by Doolittle's method, as cheaply now as at any time in the North. Untested, 75c; 6 for $4.00; 12, $7.50. Last year's tested, $1.25; select, $1.75; breeder, $2.50. Safe arrival and satisfaction guaranteed.

J. B. CASE, Port Orange, Vol. Co., Fla. 5tfdb

ONCE MORE we are up with orders for our Golden Italian Queens

that have given such general satisfaction. If you want the best, send in your orders. Single queen, $1; six for $4 50. Circular free.

CHAS. D. DUVALL, Spencerville, Md.

☞In responding to this advertisement mention GLEANINGS

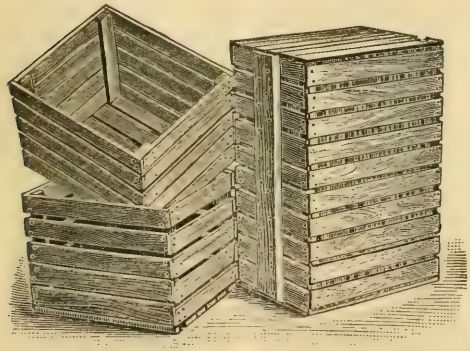
Eggs and Plants.

Several varieties. Best quality. Any quantity. Finely illustrated catalogue free. Address GEER BROS., St. Marys, Mo., or H. B. GEER, Nashville, Tenn.

BEE-HIVES AND SUPPLIES

Send for catalogue free. Address SAMUEL JONES, Highland Park College, Des Moines, Iowa. 1-19db

BUSHEL BOXES.



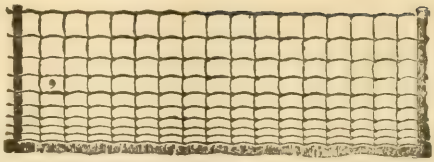
The above cut shows our new-style *all-slatted bushel box*. We have two other styles; one has slatted bottom and sides with solid ends in three pieces called the *slatted bushel box*. The other has solid ends and close bottom and sides, and is bound with galvanized iron and called the *galvanized bound box*. These boxes were devised by T. B. Terry for handling potatoes, for which purpose nothing could be handier. The potatoes are picked up into the boxes in the field and left in them till sold. Other crops, such as cucumbers, tomatoes, and apples are being handled in these same boxes. They are of such a size that two go crosswise in an ordinary wagon-box. Outside measure is 14¼x16⅞x12½ deep, and they hold a bushel of potatoes level full so they can be piled one upon another. The above cut shows two *all-slatted* boxes nailed up, and a bundle of 15 alongside; 13 of the 15 are in the flat, packed inside the other two, and nails of the proper kinds are included. The *slatted* and *galvanized bound* boxes are put up in the same way, except there are only 12 in a package instead of 15. Each package weighs about 85 to 90 lbs.

PRICE LIST.

All-slatted bushel box, per crate of 15..... .. $1 50
Slatted bushel box, per crate of 12..... ..1 50
Galvanized bound bushel box, per crate of 12....2 10

In lots of ten crates, 5 per cent discount will be deducted. Price each, nailed, 15, 18, and 22 cents, respectively. A 20-page pamphlet called Handling Farm Produce, telling all about these boxes, mailed free on application.

A. I. ROOT, Medina, O.



All these you can have and still be unhappy.

A little farm well tilled,
A little barn well filled,
A little wife well willed,
A little horse 'most killed

On the cruel barbed wire. The use of Page Coiled Spring fence would have prevented such a catastrophe.

PAGE WOVEN-WIRE FENCE CO., Adrian, Mich.

☞In responding to this advertisement mention GLEANINGS

SAY!

Did you know *TESTED* that Green sold *QUEENS* OF HIS CHOICE STRAIN OF YELLOW HUSTLER

For Only $1.00?

It's so. Before July 1st, $1.50. Mismated queens, 35c. Have your orders booked now. Full colonies and nuclei at low prices. 12tfdb

J. A. Green, Ottawa, Illinois.

5-Banded Golden Italians.

Three or five banded queens, each, 75c; 6 for $4.25. Nuclei and full colonies cheap. Catalogue free.

9-tfdb *Chas. H. Thies, Steeleville, Ill.*

Winter and Shipping Cases

Are now in season. Get our prices on same.

I. J. STRINGHAM, 105 Park Place, N. Y.

21-20db Please mention this paper.

Cash for Beeswax!

Will pay 21c per lb. cash, or 24c in trade for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 28c per lb., or 30c for *best selected wax*.

Unless you put your name *on the box*, and notify us by mail of amount sent, I can not hold myself responsible for mistakes. It will not pay as a general thing to send wax by *express*.

A. I. ROOT, Medina, Ohio.

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TAKE NOTICE!

BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH,
14tfdb New London, Wis

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Bee-Hives.

Dovetailed or otherwise. All kinds of bee-supplies.
Write for free catalogue 23-22db
W. H. PUTNAM, River Falls, Pierce Co., Wis.

For new price list of PURE ITALIAN BEES AND QUEENS, AND WHITE AND BROWN FERRETS, ADDRESS
N. A. KNAPP,
ROCHESTER, LORAIN CO., O.
Please mention this paper. 4tfdb

Only 75c for choice tested queens of Green's select strain, bred for business as well as beauty. Six for $4. Mismated, 25c. J. A. GREEN, Ottawa, Ill.

Wants or Exchange Department.

Notices will be inserted under this head at one half our usual rates. All advertisements intended for this department must not exceed five lines, and you must say you want your adv't in this department, or we will not be responsible for errors. You can have the notice as many lines as you please, but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices offering articles for sale, can not be inserted under this head. For such our regular rates of 20 cts. a line will be charged, and they will be put with the regular advertisements. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange rifle, revolver, and telescope, for ferrets, P. C. pig, or offers.
E. F. BRABHAM, Bradshaw, York Co., Neb.

TO TRADE—For honey—ext'd or comb—3 safety bicycles, one 30-inch and 2 28-inch wheels, 1¼-inch cushion tires—2 brand new, one used some. Address JNO. A. THORNTON, Lima, Ill.

TO EXCHANGE—A fine lot in the beautiful city of Ft. Worth, for 100 lbs. of comb fdn., or 300 extracting combs, L. safety bicycle, or bees. Speak quick. A bargain. $60.00 cash will buy.
G. R. ROUTZAHN, Menallen, Pa.

WANTED—To exchange full colonies Ital. bees in Dov. hives, for pure-bred Jersey or Alderney heifer that will drop first calf in coming winter or early spring, or Dov. hives. C. S. YOUNKIN,
Confluence, Somerset Co., Pa.

WANTED.—To exchange 13 swarms of bees, 12 empty hives, 48 crates filled with sections, starters, and separators, 800 brood-frames, 60 wide-frames in Simplicity hives, for poultry, pigeons, or live stock. W. H. R. OLMSTEAD,
316 North Center St., Bethlehem, Pa.

WANTED.—A turning-lathe; also Barnes combined saw. P. M. LOCKWOOD,
Sand Lake, Kent Co., Mich

WANTED.—To exchange a new Whipple spring-tooth harrow, cost $25.00, for watch, gun, or any thing useful. W. A. SANDERS,
Oak Bower, Hart Co., Ga.

Reid's Fruit Trees, Small Fruits, Vines, Roses, Ornamentals.
All the best new and old varieties. The celebrated TIMBRELL Strawberry. New Fruits a specialty. Buy direct and save one half. Price List free.
E. W. REID, BRIDGEPORT, OHIO.

FOR ALL KINDS OF BEE KEEPERS SUPPLIES ADDRESS LEAHY MFG. CO. HIGGINSVILLE MO.

In writing advertisers please mention this p per

DOVETAILED HIVES, SIMPLICITY HIVES,
SECTIONS, EXTRACTORS, ETC.
FULL LINE OF
BEE-KEEPERS' SUPPLIES.
60-PAGE CATALOGUE. 1tfdb
J. M. JENKINS, WETUMPKA, ALABAMA.
☞In responding to this advertisement mention GLEANINGS.

HONEY COLUMN.

CITY MARKETS.

BUFFALO.—*Honey.*—There is still no activity in the honey-market as yet, and prices are unchanged. There are fancy pails and moderate No. 1 comb, at 14@15; very small weight, large lots, could hardly be placed at that; yet, as soon as peaches are done, we should presume the value would improve—at least, the demand increase. We are in the market to use a few lots at moderate prices; and if those having them wish to sell them for spot cash will write us we will do our utmost to please them, or we will advance 10c per lb. upon any reasonable amount of No. 1 comb, and do our utmost with it, and remit as soon as it is all sold. Extracted is in very moderate demand, and we would not advise shipping here as yet. Very poor grades of honey are also at a range from 7 to 10c. BATTERSON & CO.,
Sept. 6. Buffalo, N. Y.

CHICAGO. — *Honey.*—Receipts and sales of comb honey are quite good, the best grades bringing 14, 15, and 16c. As yet there is not very much of a surplus, and it may be that we shall not have any great amount for some little time. Extracted honey sells at from 5c to 7c, according to the color, flavor, and style of package. Beeswax, about 22c.

We are having a good many calls from bee-keepers who are visiting the Fair, and expect increased favors of this kind as time approaches for the convention. R. A. BURNETT & CO.,
Sept. 7. 161 So. Water St., Chicago, Ill.

NEW YORK.—*Honey.*—Our market remains quiet. New comb honey is arriving freely. Demand is rather light as yet. We quote fancy white, 1-lb. sections, 14@15c; off grades, irregular and not wanted. Extracted is selling slow. We quote: California, 5¾@6c per lb.; Southern, common, 60@65c per gal.; choice, 70c. Beeswax dull at 23@24c per lb.
HILDRETH BROS. & SEGELKEN,
28 & 30 West Broadway, New York.

CHICAGO.—*Honey.*—We want honey, and ask you to ship all you have at once. Quote fancy selling at 16c; choice, 15c; No. 2, 13@14c; poor, 12c. With prospects of a large crop, we advise early shipments to the market, and can guarantee satisfaction. Extracted selling at 5½@7, depending on color, flavor, style of package, and quantity buyer will take. Beeswax, 22@24, and we have no stock on hand.
Sept. 1. S. T. FISH & CO.,
189 So. Water St., Chicago, Ill.

ALBANY.—*Honey.*—Receipts of comb honey have been smaller thus far in Sept. than during latter part of Aug., and from information received up to date the crop will be comparatively light. Comb honey selling freely at 16c for fancy white; 14@15c for No. 2; 12@13 for mixed; 10@12 for buckwheat. Extracted moving very slowly at 6@8c.
Sept. 12. CHAS. MCCULLOCH & CO.,
393, 395, and 397 Broadway, Albany, N. Y.

ALBANY.—*Honey.*—Honey market firming up some, as the crop is not panning out so large as reported a month ago. White comb, 14@16; mixed, 13@14c; dark, 11@12; extracted, white, 7½@8; mixed, 7c; dark, 6@6½. Beeswax, 25@26c.
H. R. WRIGHT,
Sept. 15. 326, 328, 330 Broadway, Albany, N. Y.

BOSTON.—*Honey.*—New comb honey is arriving quite freely, selling slowly at 15@16c per lb., in a small way. With cooler weather we expect it will move better. Extracted, there is a liberal supply on this market, selling at 7@8c. No beeswax on hand.
BLAKE & RIPLEY,
Sept. 6. Boston, Mass.

KANSAS CITY.—*Honey.*—The receipts of honey fair; demand fair. We quote white 1-lb. comb, 15@16c; amber, 12@14. Extracted, white, 7@7½; amber, 5@6c. Beeswax, 20@22.
CLEMONS, MASON & CO.,
Sept. 7. Kansas City, Mo.

DETROIT.—*Honey.*—Best white comb honey, 14c. No dark lots offered. Extracted, 7@8c. Beeswax, 24c. M. H. HUNT,
Sept. 11. Bell Branch, Mich.

CLEVELAND.—*Honey.*—No. 1 white selling at 16½@17½ in 1-lb. sections. Market slow. Not much call for No. 2 goods at present. Selling at 14@15c. Beeswax, 23c. Supply limited.
WILLIAMS BROS.,
Sept. 5. 80 & 82 Broadway, Cleveland, O.

KANSAS CITY.—*Honey.*—Receipts of honey light. White comb, 1-lb., 16; light weight, 14. Extracted, white, 7½; amber, 6½@7; dark, 5@5½. Stock very light. Beeswax in good demand, 22@25.
HAMBLIN & BEARSS,
Sept. 7. Kansas City, Mo.

ST. LOUIS.—*Honey.*—Honey very quiet, apparently no demand. We quote comb, 10@16c, according to quality. Extracted, 4½@5¼. Prime beeswax, 21c.
D. G. TUTT GROCER CO.,
Sept. 6. St. Louis, Mo.

WANTED.—Comb and extracted honey, on commission or spot cash. I have a ready sale for both white and buckwheat. I. J. STRINGHAM,
105 Park Place, New York city.

FOR SALE.—Extracted clover and basswood honey at 8c per lb. M. ISBELL, Norwich, N. Y.

BUFFALO, N. Y. Unsurpassed Honey Market.
BATTERSON & CO. Responsible, Reliable, Commission Merchants. 18tfdb **and Prompt.**

CHAS. ISRAEL & BROS., 110 Hudson St., N. Y.
WHOLESALE DEALERS & COMMISSION MERCHANTS. *Honey and Beeswax.*
Established 1875.

White SHIPPING-CASES.
To have your honey sell well, use our beautiful cases, 12 and 24 pound sizes. Send for illustrated catalogue of every thing needed in the apiary.
M. H. HUNT, Bell Branch, Mich.

To Get Acquainted,
We will send the **Bee-keepers' Enterprise** from now until Jan., '95 (16 months), for 50 c.; or 3 months for 15 cts. You will be pleased with your investment, in either case.
Burton L. Sage,
New Haven, = = Conn.
☞In responding to this advertisement mention GLEANINGS.

Aurora Farm for Sale.
Owing to poor health, and wishing a change, I will sell my farm to an immediate purchaser, on easy terms. Here are the advantages and facilities. Fine climate, good soil, adapted to potato-raising and high-pressure gardening; abundance of water for irrigating and house use; four R. R. stations; and two good cities within an hour's drive; beautiful, hard, smooth, level roads into the cities. For further particulars address, at once,
THEO. V. JESSUP,
P. O. Box 367, Greeley, Colo.
☞In responding to this advertisement mention GLEANINGS.

BEES FOR SALE.
Thirty colonies in No. 1 shape, mostly in new L. hives. The lot for $100.00, or $3.50 each in small lots. Pure Italian, $5.00.
W. D. SOPER, Jackson, Mich.

California Bee-Keepers!
Can obtain ROOT'S GOODS, also California-made Supplies, from
WM. STYAN, SAN MATEO, CAL.
☞In responding to this advertisement mention GLEANINGS.

QUEENS.

I have a large lot of fine, untested, Italian queens, and to dispose of them as quickly as possible, that the nuclei may be united, I offer them at 75c each, or a queen and the REVIEW from July (when the Experiment Apiary reports began) to the end of the year for an even $1 00.

W. Z. HUTCHINSON, Flint, Mich.

PORTER BEE ESCAPES are used and pronounced a great labor-saving implement by **Chas. Dadant & Son, Prof. A. J. Cook, Chas. F. Muth, Jno. S. Reese, J. H. Martin, John Andrews, F. A. Gemmell, Wm. McEvoy, A. F. Brown, Thomas Pierce,** and many other prominent bee-keepers. Descriptive circular and testimonials mailed free. PRICES:—Each, post-paid, with directions, 20c.; per doz., $2.25. *Return them and get your money back after trial if not satisfied.* For sale by dealers. Address **R. & E. C. PORTER LEWISTOWN, ILL.**

Queens, Yes, Queens,

And good ones too. My sales have been so large I have just caught up with orders. But I am now prepared to send by return mail:

Tested, each	$1.50
Warranted, each	.80
" per ½ dozen	4·50
" per dozen	8.00
Untested, each	.70
" per 10	6.00

Now, if you want good stock at a low price, send in your orders at once. Address

W. W. CARY, Colerain, Mass.

One of the oldest and largest breeders in America.
16-tfbd Mention GLEANINGS.

Queens Yellow to the Tip.

Great big yellow beauties, worth many times their weight in gold. That is the kind of queens Trego raises.

Who Buys Them?

Geo. E. Hilton, W. Z. Hutchinson, W. S. Hart, J. F. McIntyre, Jas. A. Green, and about 500 others not so well known. For the rest of the season there will be very few drones near me except very yellow ones, and nearly every queen should get 4 and 5 banded bees.

Ventura, Cal., Aug. 18, 1893.

S. F. Trego:—Enclosed find $5.00 for 6 queens. Since I have been in California I have bought queens of nearly all of the principal breeders in the U. S., but I never had queens that gave me the satisfaction in all points that yours do.

L. E. MERCER.

Mr. M. is one of California's great honey-producers, and ought to be a good judge of queens.

One warranted queen, $1.00; six for $5.00. Money-order office Cable, Ill.

S. F. TREGO,

Swedona, = = = Ill.

☞In responding to this advertisement mention GLEANINGS

If You Wish to Smile,

Try my fine Italian queens. Either 3 or 5 banded, bred in different yards, 75 cts. each; $4.25 for 6, or $8.00 per doz. Prices to dealers, and by the quantity, on application. Fine breeders, $5.00; always on hand. Prices for those that produce strictly 5-banded bees, on application. Remember, I guarantee safe arrival, and satisfaction in the bounds of reason. *MRS. JENNIE ATCHLEY, Beeville, Bee Co., Texas.*

PATENT WIRED COMB FOUNDATION

Has No Sag in Brood-frames.

Thin Flat-Bottom Foundation

Has no Fishbone in the Surplus Honey.

Being the cleanest, it is usually worked the quickest of any foundation made.

J. VAN DEUSEN & SONS,

Sole Manufacturers,
Sprout Brook, Montgomery Co., N. Y.

---

50 cts. each for untested queens from best imported mothers. **W. C. Frazier, Atlantic, Iowa.**

A large, yellow, prolific queen, 75c; 6 for $4. Breeders, the very best, strictly pure, guaranteed to breed all yellow queens, $2. Satisfaction given. Reference, A. I. Root.
W. H. LAWS, Lavaca, Seb. Co., Ark.

Oh, Mamma!

Have you heard of the

FREE

200-Page Bee-Book

given to every **NEW** Subscriber to the old

AMERICAN BEE JOURNAL?

Oldest, Largest, Best, Cheapest and the only **Weekly** Bee-Paper in America. 52-pag s; **$1** a year. *Sample free*

GEO. W. YORK & CO

56 Fifth Avenue, CHICAGO, ILL.

To new subscribers: the journal alone sent for 3 months for 20 cents.

Great Reduction.

Sections at greatly reduced prices. Hives, Shipping-cases, etc., at Bed-Rock Prices. Write for free Illustrated Catalogue and Price List.

G. B. Lewis Co.,

Watertown, = = = Wis.

1tfdb Please mention this paper.

BIG DISCOUNT on Foundation and Sections. Thin foundation, 50 cts. per lb.; brood, 40 cts. No. sections, $2.75 per M. Every thing cheap, price list free. E. H. TRUMPER, Bankers, Mich.

FRANKLIN COLLEGE,

New Athens, O., opens 69th year Sept. 4. Board, rent of books, and room, ***$1.80*** to ***$2*** a week. Board, room, books, tuition, fuel, and light cost only ***$120*** a year of 40 weeks; total expenses, ***$135.*** Diplomas for classical, scientific, commercial, normal, music, art, shorthand, and elocution courses. Sent out U. S. Senators, Governors, etc., and 263 ministers, ⅔ of total alumni. No saloons. Healthful. Largest attendance yet. Send for catalogue.

W. A. WILLIAMS, D. D., Pres't.

☞In responding to this advertisement mention GLEANINGS.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
PUBLISHED BY A. I. ROOT
$1.00 PER YEAR MEDINA OHIO

Vol. XXI. SEPT. 15, 1893. No. 18.

STRAY STRAWS

FROM DR. C. C. MILLER.

ARE YOU GOING to Chicago October 11?

A YOUNG BEE sheds its skin about half a dozen times while in the larval state.

SAY, DOOLITTLE, the wire cloth I use to kill bees has three meshes to the inch; and when one of its wires hits a bee it hurts.

A REMEDY FOR ANTS is given in *Revue*. It consists of pulverized crude napthaline scattered in the places frequented by the ants.

CROSSNESS, especially late in the season, is given as the leading characteristic of Punics, in Bulletin No. 30, Department of Agriculture.

DRONES from unfertilized queens, and even those from laying workers raised in worker-cells, Cheshire thinks, are just as good as any.

A FLYING BEE is supposed to vibrate its wings from 200 to 400 times in a second—say 20,000 times in a minute. Lively work, isn't it?

POLLEN is used by the French as a ferment for hydromel. Why doesn't some enterprising Yankee start the manufacture of yeast from pollen?

A WOMAN sometimes thinks she isn't in very big business when she's busy at housekeeping. But the rest of the family don't think it's very little business if she drops out of it for a while.

A QUEEN has about 5000 eyes; a worker from that to 6000, and a drone twice as many as a worker. I'm glad I'm not a bee, for with only two eyes I can see much that ought to be done.

A QUEEN'S BRAIN is not so large as that of a worker, and Cheshire thinks a queen doesn't know as much as a worker. The queen lays eggs, and the workers run all the other business of the hive.

PEOPLE are more inclined to get fat as they grow older. Not so with bees. A perfect bee weighs little more than half as much as it did when, in the grub state, it commenced spinning its cocoon.

REVERSING FRAMES has been little mentioned of late. In reply to a question about it in *A. B. J.*, only three out of twenty-five think it of any use beyond getting frames filled with comb to the bottom-bar.

ARE BEES very regular about the time of sealing up queen-cells? It seems to me that I have sometimes, when destroying queen-cells, found them containing grubs much too small to be of the regulation age.

"JUST AS SOON as it is warm enough in the spring for bees to fly," says Hutchinson, in *A. B. J.*, "I would remove them from the cellar." You wouldn't keep that up many years, W. Z., if you lived at Marengo.

DRONES are said to be free commoners. I never had much proof of it till this year. I have two colonies of half-blood Punics, the drones being pure, and those ebony-black gentlemen are scattered all over the apiary.

PULLED QUEENS, according to H. F. Coleman, in *A. B. J.*, should not be handled, the end of the cell being opened and the queen allowed to run down of her own accord. I handle mine; but the other way might be safer.

PUNICS are just like blacks in their readiness to run and fall off the combs, but exactly the reverse of blacks in their way of finishing up combs, the blacks making very white combs and Punics the greasiest-looking of all.

"BY FEEDING each colony seven or eight pounds of sugar syrup at the end of the season, it will be stored in the center of the hive, and it will be largely this food that the bees will consume during their confinement."—*Hutchinson, in A. B. J.*

A NOVEL PLAN for stopping robbing is given by M. D. Andes, in *A. B. J.* He "removed the queens from the hives that were robbing, and in 30 minutes the robbing ceased." After being queenless 48 hours they had their queen returned, and all was lovely.

BROOD IN SECTIONS never troubles me much, although there is nothing to hinder queens going up into supers if they want to. This year, however, I have not seen brood in a single section. Is it because the honey-flow was unusually heavy this year?

GALLUP, the old original Gallup, says, in *A. B. J.*, that it is so common for stray swarms to take possession of vacant chimneys, etc., in California, that "in letting a contract for a house it is now customary to insert in the contract that it must be bee-proof."

THAT BAD SMELL that I complained of, coming in the hives this year directly after clover harvest, M. B. Bergey thinks is a disease. A few of his colonies have it yearly, the bees dying in droves. I doubt whether mine is the same. I think no bees die in my case. Is his a new disease?

WINTERING IN RUSSIA, whether it be from hardier bees or a moister climate, or what not, in spite of the severe cold, seems more successful than here. Mme. Levaschof reports in *Revue*, that, out of 40 colonies, she lost only one, and that by her own fault—this with five months of

10 to 35 degrees below zero, and no flight. Colonies in open air wintered best, those suffering most being strong colonies packed too warm.

FRIEND ROOT, between you and Hasty and Doolittle you're getting the rule for cutting queen-cells twisted into pretty bad shape. Doolittle's old rule, 5 days after swarming, and again 5 days later, worked well with me; but you'll miss cells, no matter what the number of days.

THE QUALITY of honey in this country this year, so far as reported, seems unusually fine. On the contrary, in the region of *Revue Internationale*, Switzerland and France, the quality is unusually bad, honey-dew being abundant, and darkening all honey. Nearly all kinds of trees seem to afford the troublesome stuff.

I AM ASKED to tell how I came out with those big bees from Florida. Unfortunately I lost the queen by swarming before I could test them on red clover, but I had a chance to find whether they built larger cells than other bees. They built them larger than five to the inch, but I found other bees did the same.

STARTING QUEEN-CELLS is not always a sign of queenlessness when a frame of brood is given to a nucleus. Often, if not generally, if a frame of brood is given just after a young queen is hatched, the bees will start cells, only to tear them down a little later. Perhaps they want them as security in case the young queen is lost.

A TOOL that will easily and quickly start the dummy when lifting it out of a Dovetail hive is one of the things that I should like. Who has the best? and what is it like? I think the worst thing about the Dovetail hive with fixed frames is the trouble of getting out the dummy. That's as much as to say there isn't any thing very bad about the Dovetails.

A LARGER BATCH OF STATISTICS.

E. E. HASTY COMPLETELY DISPROVES ALL THE OLD-TIME RULES.

I didn't feel satisfied with so slender a show of statistics as I made out of this year's second swarms, on page 664. With so few as 22 swarms, the chapter of accidents has almost as much to do with results as general principles have. I did not relish the big job of collating my whole 14 years of records; but the upshot of it was, that I went and did just that. I found record of the time of 299 second swarms—a number large enough to pretty well swamp the accidental elements of the calculation. So the figures given below represent "bed rock" *so far as this apiary is concerned.* As I intimated before, I think similar records from other apiaries where "swarm fever" is unknown are likely to vary widely from these. And yet (the world is so full of misconceptions) I feel a little shaky, even about *that* conclusion. I think we are entitled to know in this "end of the age" whether Langstroth's declaration, that the second swarm usually comes nine days after the first, is "a mile off" from the truth or not. Those words, strictly construed, would imply that more than half the number of seconds fell on the ninth day. With me, as you see, it is only one-sixth. The figures given before seemed to indicate that eight-day swarms were much more numerous than nine-day swarms. This is simply one of the errors resulting from not having a sufficient number of swarms under consideration, and the aggregated record reverses it. Both eight-day swarms and nine-day swarms are a little inclined to come in "rafts." Here are the figures for 300 swarms, lacking one.

At 6 days	3	At 12 days	39
At 7 days	6	At 13 days	34
At 8 days	32	At 14 days	24
At 9 days	48	At 15 days	6
At 10 days	46	At 16 days	9
At 11 days	48	At 17 days	4

Just look at this table, and think of the absurdity of saying that the second swarm is "sure to come out the eighth day," or "sure to come out the ninth day"! Granting these figures, swarming reaches a maximum the ninth day and continues unchanged three days, the slight decline of two the tenth day being evidently accidental.

To show how easily one's *impressions* may get wrong, I remark that, before collating these records, I thought that twelve days was my maximum. The fact is, that there is a plain though not very heavy falling-off the twelfth day. As ninth, tenth, and eleventh days are alike, so there are three other days quite nearly alike—the eighth, the twelfth, and the thirteenth—the twelfth slightly preponderating. Then there is a considerable fall, and the fourteenth day has just half the maximum number. Also the three concluding days, during which swarms are occurrent, but rare, differ but little.

As to the few six-day and seven-day swarms, probably some of them, and perhaps nearly all, are not really normal second swarms. When the superseding of a queen and swarming come on together, the second swarm is usually timed to the first as normal *thirds* are to normal seconds; but I see no reason why occasional ones might not come out six or seven days after. So, to be worth any thing, records of seconds at six and seven days must be verified by looking at the prime to see if it really had a fertile queen at hiving time. This I do not remember of doing in either one of the tabulated instances.

Concerning your practical inquiry about better time rules for cutting cells, I'm afraid that is rather hopeless. Some of us will be content to give up altogether the job of cutting cells to prevent swarming; but cutting ripe cells when we want them to use is also one of our needs; and it is quite vexatious to go to a hive that we think ought to have ripe cells, and find nothing but very green ones; and waiting until the cells are sure to be ripe, and having them all destroyed, isn't very funny either. And we do not all feel "solid" as to whether a cell is ripe or green from the looks on the outside. The prevalence of eight-day swarms brings in a difficulty about destroying cells the eighth day which should not be overlooked. If the bees have made their minds up during the night and early morn to swarm, I do not think the destruction of the cells will change that resolution at once. I should expect them to swarm just the same, and leave the old stand with no queen, and no means of rearing any.

E. E. HASTY.

Richards, Lucas Co., Ohio, Sept. 7.

WHAT SHOULD THE GOVERNMENT DO FOR APICULTURE?

WHAT IT HAS DONE FOR OTHER INDUSTRIES.

In order to find what the government should do for apiculture we must see what its relative importance is to other industries, and what it has done for them; then we are in a position to see what aid it would be reasonable to expect and to what it should be applied.

Some years since, the government created a

Bureau of Animal Industry. Through this bureau they have investigated the diseases of animals, their cause and prevention. This has employed some of the best talent in our land. It has cost very large sums of money, and has accomplished much good. The investigation into the cause and prevention of "Texas Fever," alone, has been worth to the country many times the cost of the whole investigation.

This bureau has given the country a large and well-written book on the horse and his diseases; on cattle and their diseases, and a special report of the sheep industry of the United States, of an even thousand pages; also a book on the animal parasites of sheep. No more valuable books than these can be in the hands of those interested in these several branches of animal industry. But so far the general government has done nothing for the bee-keepers. There are in the United States about 45 million sheep. These have received attention from the government in proportion to their importance as an industry.

There are no reliable data by which we can determine the number of colonies of bees in the United States. There can be no doubt, however, that there is from one-third to one-half as many colonies of bees as there are number of sheep; and a colony of bees will average as much income as a sheep; therefore the bee-industry in the United States should have one-third as much attention from the government as the sheep-industry. Should it receive one-third the amount of aid that has been given to the sheep-raisers, and the money be judiciously used, it would solve many problems that are now mysteries. It costs the bee-keepers of America thousands of dollars each year trying hives, fixtures, and experiments, which they abandon as useless long before they are worn out.

How much money have the bee-keepers of America paid for Simplicity hives? How many of them are now in satisfactory use? Who can tell the thousands of dollars sealed covers have cost the American apiarist? What has been the cost to the country of swarm-catchers, self-hivers, and non-swarming attachments, and other similar devices? and how many of them fill the bill?

While all these things are a step upward, and in this respect are to be encouraged, yet they should be tested more thoroughly before they are given to the people in such a wholesale manner. To test such things we need an experiment station, with an appropriation of $15,000 per year, the same as is now given by the government to the several State experiment stations. This would suffice to have one general station, and have parties in several parts of the country to try experiments in their parts. If such work were properly conducted it would be very valuable. Besides investigating things of a practical nature, such a station could investigate things of a scientific nature on which apiarists are not now agreed.

We should like to know how many pounds of honey an average colony consumes during a year. How many pounds of honey does it take to make a pound of beeswax? Do bees ever remove eggs from one cell to another to raise queens? Do worker bees, in order to become "laying workers," mate with drones? Will the drones from laying workers fertilize queens? Will the drones from unmated queens fertilize queens? Would a strain of bees inbred, beyond the range of any other bees, degenerate? Besides these we want to know how much foundation it pays to use, both in brood-chamber and in sections; just how much more extracted than comb honey (if any) bees will make. In fact, the things we do know are very few; and the things we do *not* know are innumerable.

Some may say, "Why, I have conducted some of the experiments mentioned, and have settled them beyond a doubt." Friend, you are too fast; you have gone off at "half-cock." The number of experiments thoroughly demonstrated is very small. When a man makes a discovery, or thinks he does, the first thing he does is to write to his favorite bee-journal, announcing his discovery (?) in the most glowing terms, calling upon the whole world to "see our light;" when the fact is, in nine cases out of ten, there is no light. It's peculiar how each leader in apiculture makes all his efforts tend to demonstrate some pet idea. If he believes a certain kind of hive is the best, all his efforts and experiments tend to show that it is. If a certain strain of bees meets his fancy, all his experiments seem to confirm his belief; but such seems to be the tendency of life. If a government station were established, much of its efficiency would depend upon the apiarist in charge. If he were a man of hobbies, its usefulness would be limited; if open to conviction much good would result. We are fortunate in having in America just the man to conduct such a station—one in whom we all have implicit confidence—a man with but one hobby; that is, he believes the pure Carniolan bee is as good a race as can be found; and although I breed and advocate another race, I do not know but he is correct. I refer to Mr. Frank Benton, of Washington, D. C., one whom I believe we should all be pleased to see placed at the head of an experiment station, if such a thing were to be established by our government.

Atlantic, Iowa, Aug. 28. W. C. FRAZIER.

GIVING QUEENS TO COLONIES IMMEDIATELY AFTER SWARMING.

G. M. DOOLITTLE STATES HIS OBJECTIONS.

I am asked to give an article in GLEANINGS on the plan of giving each colony a laying queen immediately after swarming, as is recommended by some, and also telling whether I consider the plan a good one or not. As I do not consider the plan a good one, I will try to give my reasons for so thinking.

For years we have been told that no colony should go without a laying queen for a single day, if it were possible to give it one; and plans for introducing queens which required that the hive should be queenless a week or so previous have been severely criticised. We have also been told that the bee-keeper who wishes to secure the best results from his bees should have a laying queen ready to give to each colony as soon as it swarms, as the time lost to the old colony in rearing a queen is equivalent to a swarm of bees. Being eager to know for myself all of the plans which would give the best results, I have experimented largely along these lines; and the truth of the statement, that the time lost to the bees in rearing a queen in natural swarming is equivalent to a swarm of bees, is the first reason that the plan has not been a success with me. If it were bees that I were after, the case would be different. With us the white clover yields only enough to keep the bees breeding nicely, and prepares them so that they swarm mainly from June 20th to July 1st. Our honey-harvest is principally from basswood, which blooms from July 5th to 16th. Now, all who are familiar with natural swarming know that the bees are comparatively few in spring, and increase by the rapidly increasing brood produced by the queen, which in due time hatch into bees, until a swarm is the re-

sult. By giving a laying queen to a colony immediately after it has cast a swarm, we bring about the same result (natural swarming) as before, or we place the bees in the same condition. The only difference is, that, having plenty of brood, they build up quicker and are prepared to swarm in a shorter time. As this second swarming, brought about by giving the laying queen, comes right in our basswood-honey harvest, it cuts off the surplus honey; for it is well known that bees having the swarming fever do little or no work in the section boxes; and if allowed to swarm, the object we have sought (section honey) is largely beyond our reach.

Having given my experience on this point, let us see how the same colony would work had we not given the bees a laying queen.

Eight days after the swarm issued, the first young queen would have emerged from her cell, as a rule, when the apiarist should remove all the other queen-cells from the hive, so that second swarming is entirely prevented. In ten days more our young queen is ready to lay, which is about the time basswood begins to yield honey largely. During this period, between the time the swarm issued and when the young queen commences to lay, the bees, not having any bees to nurse for the last half of the time, consume but little honey; hence, as fast as the young bees emerge from the cells they are filled with honey; for bees not having a queen nor any unsealed brood seldom build any comb in the sections. Thus, when the young queen is ready to lay she finds every available cell stored with honey. At this point the instinct of the bees teaches them that they must have brood or else they will soon cease to exist as a colony, and a general rush is made for the sections. The honey from below is carried above, so as to give the queen room, and in a week we have, as a result, the sections nearly filled with honey, as this honey carried from below, together with that from the fields, now gathered with renewed vigor, rushes things along wonderfully. I have had such colonies fill and complete section honey to the amount of sixty pounds in from ten to twelve days, while those to which I had given a laying queen immediately after swarming did little else than swarm during the same time. Different locations may give different results; still, I think nearly all locations give a large flow of honey at a certain period during the season, rather than a steady, continuous honey-harvest the whole summer. To such sections these remarks are applicable.

My second reason is, that, after basswood, we have a honey-dearth, hence the bees from the introduced queen are of no real value, but, on the contrary, become consumers. On an average it takes 37 days from the time the eggs are laid till the bee goes to the field to labor; hence the eggs for the honey-gathering bees must be deposited in the cells that length of time before the honey-harvest ends, or else they are of no value as honey-producers. As the basswood is all gone before the eggs of the introduced queen become honey-producing bees, and as the larger part of them die of old age before buckwheat and fall flowers yield honey, it will be seen that a great gain is made by letting each old colony having cast a swarm rear its own queen; for thereby we save the expensive feeding of the larvæ, which are to become expensive consumers of the honey of the hive. The chances also are, that, where the colony rears its own queen, it will be better stocked with younger bees for wintering in November than where a queen was introduced immediately after swarming.

The one point worth knowing above all others in bee-keeping is a thorough knowledge of the location we are in, as to its honey resources, and then secure the largest amount of bees possible at that time or those times to gather the honey, having just as few at all other times as is consistent with the accomplishment of this object. In working so that we have the bees out of season, we have to pay the same price for them that we should to secure them so that each one becomes a producer instead of a consumer.

If all who read this article will study their locality, and then rear the bees in reference to that location, I think they will find that their bees will do as well as those of their more successful neighbors. We often hear it said, that one colony in an apiary did much better than the rest; and, had they all done as well, a large crop of honey would have been the result. The reason that one colony did so well was because it happened to have a large proportion of its bees of the right age to gather honey just in the honey-harvest; and if we can get all in this condition we can secure a like result from the whole apiary. G. M. Doolittle.

Borodino, N. Y., Sept. 5.

A GLIMPSE OF A WISCONSIN APIARY.

OUR OLD FRIEND F. L. SNYDER, AND SOMETHING ABOUT THE HONEY CROP, THE FAMILY, ETC.

Friend Root:—Do you remember that, just four years ago to-day, you left our home for Mr. Pickard's, Freeborn's, and Hatch's? It seems many years to me since then; and as I read in Gleanings about your travels, I thank God that he gives you health and strength that you may go and see, and tell us of the wonders there are to be seen. I have not so much honey now as then, but my garden is much nicer. My Early Sunrise and Potentate potatoes are wonderful, while the Freeman and Polaris are trying to outdo each other.

While I am talking with you in regard to my garden I will send you a picture of a part of our bee-yard and home, just as it looked two weeks ago.

Last year was a total failure here, except, while many of the best bee-keepers had to feed sugar, mine had enough honey to winter on; and this year we are working them "for all there is in them." We have had the worst spring dwindling in 1893 we ever had. We lost fully half, hence not so much honey as in other years. We do not use queen-excluding honey-boards, so you see the boys are after the queens in the top-boxes. Charley, on the right, is now 14 years old. All he knows in bee-keeping is what he learned in our yard, and by reading Gleanings and the A B C; yet I think he is able to take care of and make it a success with a thousand colonies, if he had men to do the lifting. You see, he has his bee-hat in his hand. He will work but very little without it, and he will use no smoker but the Bingham. He does not like the bees, and they do not like him; but he will not be driven out of the yard. Then he has his smoker, but he declares he will never have a bee on his place when he gets to be a man.

Right in front is Grover C., 9 years old. His hands are not strong enough to blow a Bingham, so he takes the Clark. He thinks the Clark is better, for it does not make the bees so hot when the smoke hits them. He is, perhaps, the most restless boy in the bee-yard, living. More than half of his time he is without hat or stockings or shoes on. He has been working with the bees about four years himself; and he and his brother Ernest, two years younger,

APIARY, RESIDENCE, AND FAMILY OF F. L. SNYDER, ORION, WIS.

have bees of their own, and they must have the best of care in the spring when brought out of the cellar. By the picture you will notice Grover has forgotten himself, and is taking a sly look at the strange lady taking the picture. It was taken about 11 o'clock. The bees were flying strongly, yet you can see by his looks he does not care for them. Just back of him is Helena. She has worked with bees ever since we have had bees, till within the last two or three years, when she had enough to do to help her grandma take care of the rest of us. She will keep bees when she gets a home of her own.

That other lady is the *new* queen in the "Snyder hive." I brought her home last winter. I can not name her race, for in size she resembles the little brown or German bee; in color and disposition, the Italian; and when any one tries to drive her she shows the Cyprian. In a moment of energy you would call her perhaps a hybrid—a rather mixed-up mess; but she was not imported; she is *full American;* and should we ever be so lucky as to have you come to this part of Wisconsin and our place, you can get a good glass of lemonade, and she will be happy to see you; and I know she and grandma will do their best to make it pleasant for you or any one else from the Home of the Honey-bee.

Those four in the background just happened to be here. Ernest R. and his grandma are in Minnesota this summer. At the left, and back of Charley, is your humble servant—

Orion, Wis., July, 1893. F. L. Snyder.

[Those who have Gleanings for 1889 will find, by looking on page 680, that I greatly enjoyed myself once on a time when I found this pretty home on the banks of the beautiful Wisconsin River. We had beautiful soft water and just the nicest lemonade; and before retiring at night friend S. gave me the big arm-chair and the old family Bible; and while we were having a little visit that I shall always remember, he told me he had learned through Gleanings to make that Bible his friend and counselor, and his hope, even when grim death laid its hand on one of that little household. I remember the vine-covered porch to the honey-house, and the stairs that led to the little room above. I remember, too, the fruit and the flowers, and the pretty garden. The memory of that visit makes me long to repeat it. May God ever bless and watch over your little flock, friend S.; and may he give wisdom and understanding, both to you and the "*new* queen" as you together lead them all in the way of eternal life.—A. I. R.]

WILL TWO QUEENS FIGHT?

INTERESTING FACTS FROM OBSERVATION.

I wish you would say to that jolly old fellow and fun-maker, Dr. Miller, that we Southerners had thought he was a real practical apiarist until we saw in Stray Straws where he said, "I never saw two laying queens show fight—did you?" Why, bless the doctor's heart! If he had put it, "I never saw them fail to show fight—did you?" then we should have had the same high opinion of him that we have always had on any thing pertaining to the bee-business. His queens haven't got the grit ours have here in the South, or else he has not tried the experiment often of caging two laying queens together. I have tried it often, and *never* failed to see them show fight, and that to the death of one of them.

DO VIRGIN QUEENS MEET THE DRONE MORE THAN ONCE BEFORE COMMENCING TO LAY?

I say she does, for I have witnessed it the third time this summer; that is, I have seen three different queens this spring and summer return to the hives showing signs of having met the drone the second time. The circumstances were these: I was sitting by a hive one afternoon, that I knew contained a virgin queen. I saw the queen come out and make the third trip that afternoon. The last time she was gone quite awhile, but returned, showing all signs of having met the drone. As I was in need of some queens (that I had promised a friend), I kept close watch of this queen, looking into the hive every few days for about a week, to see if she was laying; but all to no purpose, when at last one day I opened it and found she was gone. I then closed it, and went and got a queen-cell, and was about to put it into the hive, when, to my surprise, I saw the same queen come in at the entrance, showing all signs of having met the drone the second time. I have also seen the same thing twice since that, as above stated. Who says I am wrong? It's the case with all of our domestic animals; why not with the queen-bees?

I witnessed a queen laying in a queen-cell. I believe it is claimed by some that a queen never deposits the egg in a cell from which a rival queen is to be reared; but I had always doubted such being the case, and now I know they do at least deposit eggs in them sometimes, for I have just witnessed the sight. I have a hive in my yard, the queen of which has been showing signs of failure for some time. I have just had the hive open; and, while holding a frame in my hands, I saw the queen depositing eggs in drone comb right close to a queen-cell. I watched her for a few moments, and she crawled up to the queen-cup, and peeped in (as she always does before depositing eggs in any cell), and curved herself up and deposited an egg with as much unconcern as she did in any of the drone comb.

THE HONEY CROP A FAILURE FOR THREE YEARS.

The honey crop has been a failure here for three years. It doesn't stop at the honey crop being a failure this year, but crops of all kinds are a failure this year—that is, in this part of the State. L. B. Smith.

Lometa, Texas, July 30.

[Dr. Miller replies:]

I am sorry to lose the good opinion of Bro. Smith, but I suppose it's better to tell the truth, even if I lose caste with the whole Smith family; and the plain truth is, I never saw two laying queens fight. It is true, I never saw them put to the test in a great number of cases, but I have known a number of cases where they got along peaceably together.

I am well aware that some stoutly insist that, whenever two queens get together, there's bound to be a funeral, but I can hardly understand how they can insist there are no exceptions to the rule in face of the considerable number of those who have reported finding two queens in a hive. Only lately there was reported in Gleanings a case in which two queens were dwelling together in a sisterly manner, and that right in the sanctum of Gleanings. What object would there or could there be in such cases for false reports?

From the fact that Bro. Smith has seen so many cases in which laying queens fought, I suppose my experience in the matter is somewhat exceptional, but that doesn't alter the truth. At the present time I have no less than three colonies with two queens in each, or, at

least, they were there the last time I visited them, only a few days ago. In one case both queens are laying, and in the other two the younger queens have not yet commenced to lay. I doubt whether two queens often continue together very long in one hive, the older one being about played out, I think.

I think there is a tendency to pin our faith a little too closely to established tradition in a good many cases, and there is also too great a tendency to settle rules upon too limited an experience. Not very long ago I raised the question whether laying workers were ever present before all brood had disappeared. I was promptly answered that laying workers often commenced their work while brood is present, and since then I have had more than one case of the kind, in some cases a young queen being either present or on the way. I once saw a queen sting to death a worker, and reported it. It was a somewhat dangerous thing to do, for my veracity was called in question, simply because the one who disputed it had never seen any thing of the kind himself.

Now, at the risk of being called an idiot and a liar, I'm going to say that, in a number of cases, I have seen two virgin queens together for some time before there was any fight, although the queens could not but be aware of each other's presence, as they touched more than once. On the other hand, I have seen two virgins fight to the death not a minute after emerging from the cell.

There are exceptions to all rules generally, and sometimes the exceptions are so many that it is hard to say which is exception and which is rule. C. C. M.

[Referring to the matter of a virgin queen being fertilized more than once before laying, we would say the facts observed by our correspondent are rather new. Has any one else observed the same? We have always taught, and have been taught, that once meeting the drone sufficed.]

TAYLOR'S NON-SWARMING PLAN.

WHY THE LANGDON PLAN WON'T WORK.

Friend Root:—The fact that I am and have been experimenting on a non-swarming hive or system of manipulation to effect that purpose, is generally known to the readers of the bee-journals. I see that the Langdon device has failed to come to time, the results and reports of R. L. Taylor and Mr. Secor settling that fact. The editor of the *Bee keepers' Review* knows that I have never had any hope of the Langdon plan succeeding, there being more than one reason for expecting failure, to one who had already practically explored the ground occupied by both Langdon and Aiken.

My experiments this year have not darkened the hope of yet perfecting a practical plan whereby swarming can be controlled, even if we could not get quite so much honey. A plan that would enable us to escape that constant watching through the whole working season that is now a necessity, and enable us to keep either a home yard or out-yards by visiting them and giving a little attention once a week, would be a great boon. This much I will assure the bee-keepers: I will not offer any thing, either for sale or even trial, until I have something certain to offer. The plan I am now working on is radically different from the Langdon plan. There is a similarity in some respects; but the radical difference is, that the plan of Mr. L. contemplates two hives and two entirely distinct families, with entirely separate entrances; while my plan is one hive with practically but one family, all the bees using one common alighting-board and entrance, but with two queens, these queens to be kept separated by a wire-cloth partition through the center of the hive. This partition, however, serves other purposes than keeping the queens apart, as it is entirely necessary in order to manipulate the bees as desired. The possibility of working a single colony of worker bees with two queens in a single hive divided by a gauze partition is no longer an experiment. I now state here the fact that I am working such colonies with entire success, the whole colony of workers using either side of the hive, and accepting either queen, without the least disturbance. This is what I claim as my discovery, and I shall keep myself protected legally in its use, so that, if it ever proves successful in serving a useful purpose, there will be no question of priority to dispute about.

The bees I used in the new hives this season were blacks; and to determine whether the bees did fully fraternize I removed one black queen from each of two hives early in the season, and replaced them with pure Italians. Thus there was a black queen in one side of each hive, and an Italian in the other. The point aimed at was to see whether the Italian bees, after they hatched out, would all remain in their own side of the hive with their mother, or would accept the whole hive and both queens as their home. After several examinations I found, to my great joy, that the yellow Italians were equally distributed in both apartments, and were indiscriminately intermixed throughout the hive.

I next tried removing both black queens and substituting Italians, to see whether the bees from the other side would regard them with disfavor; and, after releasing the new queens and waiting several days, I examined the hives and again was overjoyed to find my pet queens peacefully and quietly doing duty.

Now, friends, I have good reason to hope that I shall yet succeed in accomplishing my task of working out a successful non-swarming hive. I have had a higher motive in my nine years' work in this line than the making of money; and if I succeed I will never use it other than to benefit the bee-keeping fraternity.

I see that friend Secor smothered two of his best colonies in trying the Langdon machine. I should have expected this result where a full colony was given no greater means of exit than a passage large enough for only a single bee to pass out. In my own device there is no danger of smothering the bees, as the closed hive may have the entrance at the back opened the whole width of the hive if necessary. I have frequently noticed that, where bees from different hives get mixed together in natural swarming, they are quite prone to swarm out again after being hived. They seem to be in an excited and unnatural condition. Now, when two swarms are thrown together, as in Mr. Langdon's plan, the bees are entire strangers, and I think this accounts for their strong passion for swarming, as reported by R. L. Taylor. In my plan the bees are not strangers that are suddenly thrown together, but members of a common family, and they will be free from that excitement that would naturally follow from the home being suddenly crowded with strangers, and I believe I shall not fail from this cause. In Langdon's hive, every bee that leaves the closed hive had to go into the already overcrowded one. In my hive no bees go to the full hive. After those used to flying have left the closed hive, the young bees that have their first flight will fly from the back entrance and will return there. Friend Langdon tried to criticise this feature; but I regard

this as being the strong point in my hive, as these bees are just the needed nurses for the unsealed larvæ, and are absolutely needed to maintain a healthy condition, and enable the queen to continue her work. If I live and have the strength next year, I shall finish my work with non-swarmers; for if this fails I shall "throw up the sponge."

But whatever comes of the non-swarmer, the house-apiary is a complete success with me, and I greatly wish, friend Root, that you could be here and be convinced. I have boomed the house-apiary; I have nursed it as my choice pet; and now, after three seasons' trial, I declare that I made no mistake when I said that the house-apiary had come to stay, and that soon most good bee-keepers would keep their bees in that way. B. Taylor.

Forestville, Minn., Aug. 19.

[So far the non-swarming plans have not given us any great hope of success; but we are all the time willing to "grasp at a straw," with the hope that some time a plan or method may be discovered. We would recommend a careful reading of the article above, and we are sure that all the bee-brethren would be willing to accord to Mr. Taylor whatever originality in plan may belong to him.]

RAINFALL AND ITS DISTRIBUTION IN CALIFORNIA.

A LETTER FROM COREY, OF SMOKER FAME.

Mr. Root:—The district in which I am located is known as the Santa Clara Valley. The stream of the same name rises in the mountain above Acton, Los Angeles Co., and is called the Solidad Canyon for the upper 30 miles. Streams, both from north and south, flow into it; and from Saugus to the Pacific it is known as the "Santa Clara." Bees are distributed along this valley from its source to its mouth; and long canyons, most of which flow into it from the north, are well known to all Southern California bee-keepers, many of whom occasionally contribute to the columns of Gleanings.

The rainfall for the past season was very irregularly distributed over this district. The upper portion, where the downpour has generally been most liberal, was scant, in many localities the fall being less than 12 inches. The amount gradually increased toward the Pacific Ocean, until at Santa Paula our rainfall was over 30 inches.

The honey-flow appeared to be more uneven than the rainfall, the crop being quite light until a point about 12 miles above Saugus; and from that point west to the Piru the flow appeared more even and abundant than higher up and lower down the valley; still, some very fair crops were made outside the district described.

The generally accepted theory, that uniform warm weather is most favorable for a good honey-flow, has received a backset this season, as the weather was quite cool during all the 60 days of our flow; and so constant and even was the flow that bees would not pay any attention whatever to honey in any form; in fact, we paid no attention to the doors of our extracting-house, as bees were too busy to notice the doors.

In summing up, it would appear that less than 12 inches of rainfall diminishes the honey crop in this district; that 15 to 20 inches is more favorable for a good crop than 25 to 30 inches, and that uniform temperature is of more importance to bee-keepers than higher temperature, as, in most cases, very hot weather is followed by cool weather, which cuts off the honey-flow.

The average per colony, over the higher portion of this district, where the rainfall was 12 inches or less, was not over 100 lbs. of extracted honey; in the central portion, about 200 lbs.; and in the lower, or coast district, 150 lbs. per colony, spring count.

The vexed question of new or second-hand cans and cases has nearly settled itself by the bulk shipments of oils and gasoline from the east, thus making gasoline and coal-oil cans scarce, and high in price, and more difficult to obtain in sufficient quantity. Heretofore the bee-keeper who bought second-hand cans and cases at from 25 to 50 cts., planed the cases and cleaned the cans, and packed his crop, had the advantage of from $5.00 to $8.00 per ton over his careful painstaking neighbor who paid 90 cts. each for his cases and cans. Dealers are helping to bring about this much-needed reform in style of putting up our honey for the market; and, in the language of the country, "soap-fat cans" are doomed.

Bee-keepers are gradually abandoning "gums and boxes," and are using better hives and frames. Better management in all departments connected with the apiary is being brought about by bee keepers' meetings in which all the latest appliances are shown and their merits canvassed. J. G. Corey.

Santa Paula, Cal., Sept. 1.

RAMBLE 92.

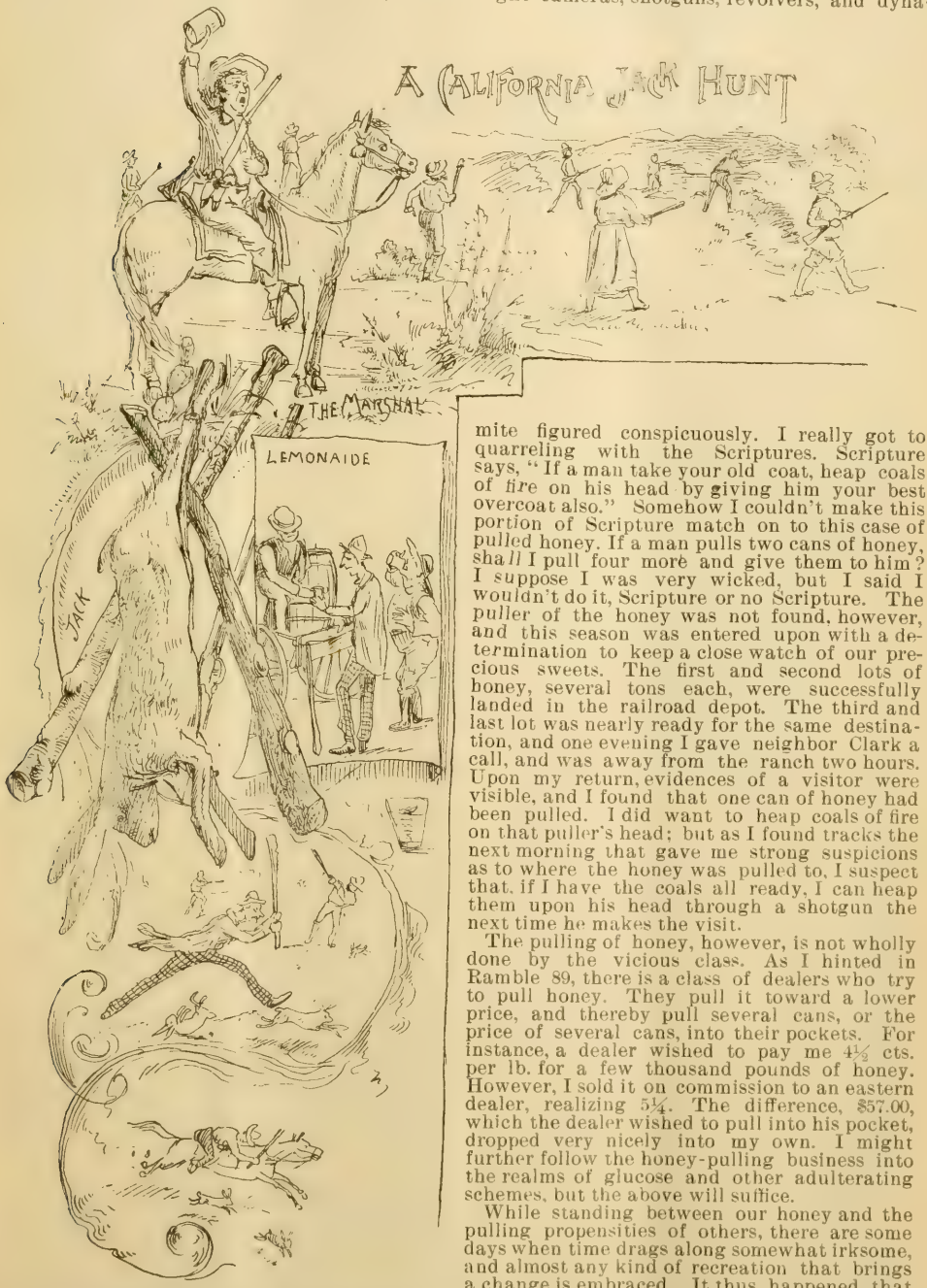
PULLED HONEY.

"Pulled queens" seems to be the topic in certain quarters lately, and it seemed to me that a few words in relation to pulled honey would not be amiss. This kind of honey is not particularly indigenous to California, any more than pulled queens are indigenous to Texas; for I have heard of it as being known in early times in the far East. For instance, my grandsire had a fine row of Weeks hives, suspended in the old-fashioned way upon two horizontal scantling. One night some persons pulled several boxes of honey from the surplus chamber, and kept pulling them until they were several miles away. Suspicions and constables followed the pullers; suspicions materialized into certainties, and the pullers were punished. But the pulling did not end there. A few nights after the unpleasantness had been settled, the same pullers, presumably, smarting under the infliction of justice, pulled one of the scantling that supported the hives, and the whole row was wrecked. Against this pull there seemed to be no remedy; and from those days of my grandsire the episode was handed down to us grandchildren, with the solemn admonition that pulled honey always had a demoralizing effect upon the puller—and a sort of reflex action upon the pullee. The admonition was good; and, having no children of my own to hand it down to, I wish to make the effect as widespread as possible, and therefore hand it to other bee-keepers' children. Children never pull honey.

After a two-years' sojourn in California, I find that honey-pullers are not confined to the ancient days, but they also grow here in this balmy clime.

When I first commenced rambling with our happy California bee-keepers, and saw their honey in great piles in remote places, I questioned them in relation to the amount of pulled honey, and was surprised to find that, in a majority of cases, it was none. It was, there-

fore, with happy thoughts that I commenced work in the apiary assigned to me, feeling sure that, whatever else might befall me, pulled honey would not be on the list. After the season was well advanced, and my cases of honey were piled up ready for the teamsters, I left it in that condition and spent Sunday in Riverside, attending church regularly, morning and evening; and after having indulged in good thoughts I went out to the apiary Monday morning, and, soon after arrival, found that I had a genuine case of pulled honey. Two 60-lb. cans of my hard-earned honey had been pulled out of the cases and were missing. I had some very blood-thirsty thoughts for some time; passed several resolutions in which flash-light cameras, shotguns, revolvers, and dynamite figured conspicuously. I really got to quarreling with the Scriptures. Scripture says, "If a man take your old coat, heap coals of fire on his head by giving him your best overcoat also." Somehow I couldn't make this portion of Scripture match on to this case of pulled honey. If a man pulls two cans of honey, sha*ll* I pull four more and give them to him? I suppose I was very wicked, but I said I wouldn't do it, Scripture or no Scripture. The puller of the honey was not found, however, and this season was entered upon with a determination to keep a close watch of our precious sweets. The first and second lots of honey, several tons each, were successfully landed in the railroad depot. The third and last lot was nearly ready for the same destination, and one evening I gave neighbor Clark a call, and was away from the ranch two hours. Upon my return, evidences of a visitor were visible, and I found that one can of honey had been pulled. I did want to heap coals of fire on that puller's head; but as I found tracks the next morning that gave me strong suspicions as to where the honey was pulled to, I suspect that, if I have the coals all ready, I can heap them upon his head through a shotgun the next time he makes the visit.



The pulling of honey, however, is not wholly done by the vicious class. As I hinted in Ramble 89, there is a class of dealers who try to pull honey. They pull it toward a lower price, and thereby pull several cans, or the price of several cans, into their pockets. For instance, a dealer wished to pay me 4½ cts. per lb. for a few thousand pounds of honey. However, I sold it on commission to an eastern dealer, realizing 5¼. The difference, $57.00, which the dealer wished to pull into his pocket, dropped very nicely into my own. I might further follow the honey-pulling business into the realms of glucose and other adulterating schemes, but the above will suffice.

While standing between our honey and the pulling propensities of others, there are some days when time drags along somewhat irksome, and almost any kind of recreation that brings a change is embraced. It thus happened that a great rabbit-drive came off near our apiary; and knowing that a few sketches from such an unusual field of action would interest the bee-keeper, I herewith present them with a few comments.

Rabbit-driving is an institution peculiar to California. The long-eared jack-rabbit is very destructive to tender vegetables and to the bark of young fruit-trees which are so rapidly invading his domain. The coyote is a natural enemy of the rabbit; but a State bounty of $5.00 on his scalp so decimated his ranks that the balance of numbers was thrown in favor of the rabbit family, and a consequent increase of vexation to the rancher. The pest is endured until every rancher receives more or less damage; then a grand rabbit-hunt is organized.

There are two methods employed to make a wholesale slaughter. Sometimes a corral is constructed with wide-expanding wings. The drive is carefully organized, and noise and clubs are the chief implements used. All of the rabbits from a mile area are concentrated into the corral and killed.

Another plan is to form a long line of men, armed with shotguns. As the line advances, the rabbits take alarm; and, leaping from their cover, attempt to run along in front of the line of shotguns; its life is soon cut short, if not by one shot then by half a dozen in rapid succession. The line on our rabbit-drive was nearly a mile in length, and was composed of a nondescript crowd of over 200 men, boys, and women. There was a cavalry contingent on the flanks, made up of Mexicans and boys, whooping in the rabbits and giving chase to those that were likely to escape. The front rank of the shotgun brigade was on foot; behind came several wagons loaded with women and children to see the fun; and still further in the rear were two big wagons with barrels of lemonade, for this is a very thirsty country. The whole force was under the direction of a grand marshal; and his orders to halt, to wheel and to march, were obeyed with the precision of a drilled army. A baking-powder can, with a few pebbles in it, was vigorously shaken by the marshal to attract attention; orders were then given in a stentorian voice, and also imparted to the outlying wings by several mounted subordinates, who went to their posts at a breakneck speed and a series of whoops. The rapid advance of the whole line, and the continuous bang of guns, made a novel and exciting picture.

The little army made Bloomington its objective point for dinner, and here the hungry crowd was bountifully fed. A rest, and then a final drive in the afternoon. This time the swing was made to within half a mile of the Rambler's apiary, and he dropped out and sought his cabin, where the watch over the honey was resumed. Over a thousand rabbits were shot that day, and the pest was that much abated. While our line was marching through the low bushes, two or three miles from any habitation, we came upon a bee-ranch that was just being established. The hives, cans, extractor, and cases were in a promiscuous condition, and the only residence was a bough house. The situation was decidedly picturesque.

Quite a number of bee-men were in the hunt, with their families. They did valiant service with the shotgun, for all bee-men are good marksmen, with, possibly, the exception of the

Rambler.

The queen-cages and other things we ordered of you arrived all right, and are the nicest lot of goods we have ever bought. We did not expect you to send wire cloth for the large cages, nor did we expect the covers printed. In the future we shall know where to send for a choice lot of goods.

Decatur, Miss., July 25. Cleveland Bros.

THOSE OLD BEE-BOOKS.

ANOTHER PEEP AT THE "GOOD OLD TIMES."

The second edition of Thomas Wildman's "Treatise on the Management of Bees" appeared in London in 1770—the year famous in American history for what is known as the Boston Massacre. The book in question is a well-printed octavo volume of 320 pages, large clear type. The old-fashioned long S is used, except at the end of words—fomething this fafhion, fo! On the title-page some former owner has written "excellent," and also added side-notes all through the book. For instance, on page 33 the author says he has seen bees come home loaded with wax the same day they emerge from the cells. The commentator adds, "Mr. Wildman is certainly mistaken here."

Some very interesting information is to be found all through this volume. For instance, before the Europeans took possession of the West Indies, honey was very much more extensively used than then (130 years ago); but, on the other hand, luxury had greatly enhanced the price of wax, it being used for candles in all polite assemblies, but more particularly for wax candles in Roman churches. Our author says honey was raised mainly for the mead and wines made from it; but as the Mohammedans were forbidden the use of wine, "Africa affords the great supply of wax to the western parts of Europe as Asia and Greece do to the eastern." This is for the benefit of those who don't like to raise rye.

In 1757 an ordinance was passed in Rouen, a city in the north of France, to encourage the cultivation of bees. A diminution of the capita tax was promised, proportioned to the number of hives kept each year. The weight of taxation suffered at that time by the wretched inhabitants of that loveliest of lands can best be realized when we read of the awful horrors of the French Revolution of 1789-'94.

As honey was then an article of very great importance, a French writer, quoted by Mr. Wildman, "recommends it as worthy the particular attention of the schools of agriculture which he proposes should be established in different districts of France." That is in line with what Mr. W. C. Frazier advocates in this number—see page 700.

The author is confident that he has the best hive in use, and that his system combines all the advantages of the others. It seems from this that the desire to make a new hive is nothing new; and that same desire to improve our condition is what makes the difference between France, England, and the United States on the one hand, as contrasted with the stagnant and effete Egyptians, Arabs, Turks, and other peoples cursed with a religion based on fatalism, or predestination. Some nice copper-plate engravings show his hive, which is 7 in. in height and 10 in. in width. As showing how two persons sometimes adopt the same idea at the same time, each ignorant of what the other is doing, Mr. Wildman says that the Count de la Bourdonnaye, in Brittany, France, did practically the same thing. Each hive held about a peck.

In one of our exchanges lately, somebody was wailing because the honey-extractor had ever been invented; but in order to get along without one, Mr. Wildman tells us, "Before the combs are laid to drain out their honey, they should be carefully cleaned of every sort of filth or insects. The crust with which the bees cover the honey in them should be pared off with a sharp, thin, broad knife, and the combs themselves should be divided through the middle, in such a manner as to render the cells open at

both ends, that the honey may flow the more freely out of them. The combs should be laid in this state on sieves, or some other contrivance which will afford the honey a free passage through. It will run quite clear; and the honey thus obtained should be kept by itself, as being the purest and best."

That's good, but too slow for Cuba at least. What a revelation to the writer of the above to see the large extractors of to-day!

All have heard about the poisonous honey which Xenophon's soldiers ate during his famous retreat. Mr. Wildman gives the words of the famous writer and soldier as follows, from the Greek, written about 400 years B. C.:

"The soldiers sucked some honey-combs in a place near Trebizond [in Asia Minor, on the Black Sea, latitude 41° north], where there was a great number of bee-hives. All who sucked them became intoxicated; vomited and purged; not one was able to stand upon his legs. Those who had taken but little were like men drunk; but those who had taken a good deal were like mad men, and some lay like men dead. The next day, about the same hour, they recovered their senses; but it was three or four days before they were entirely restored, as if they had taken a poison."

It is believed that this honey came from the chamærhododendros; and if we were certain that those soldiers pronounced that word many times it would account for much of "that tired feeling" that seems to have overcome them.

In the previous issue I spoke about the advantages of Spanish broom as a honey-plant. Mr. Wildman speaks even more highly of it than Mr. Mills did; but it must not, I am now sure, be confounded with common broom, which is a sorghum. Spanish broom is described as having many long flexible rushlike twigs, and yielding a large crop of honey to those who formerly had but little. I believe this plant is what the French call *genet* or *plante de genet*, which was the insignia of the Plantagenet dynasty in England, commencing with Henry II., in 1154, and ending with Richard III. in 1485.

The island of Corsica, just west of Italy, is spoken of as a remarkable place for bees. When it was "subject to the Romans a tribute was imposed upon it of no less than 200,000 pounds of wax yearly. Indeed, the laurel, the almond-tree, and the myrtle, in the flowers of which the bees find so much sweetness, are very common there; and the hills are all covered with wild thyme and other fragrant herbs."

In the A B C of Bee Culture is related the experience of some mathematicians in finding the angles of a figure which would contain the most, or have the largest area. Kœnig, by a most elaborate system of figuring, put it down as 109° 26′ for the larger angle, and 70° 34′ for the smaller one, or 180° together. Owing to an error in the book used, this was corrected to 109° 28′ and 70° 32′. That is, a six-sided cell or cup will hold more than any other cup of the same diameter and depth. It seems hard to believe that any blind force worked out this problem, for the great Maker of all things has no problems to work out nor experiments to make along this or any other "line."

It seems that the great enemy of bees in England when this book was written was the wasp. Many pages are devoted to this insect — how to destroy it, etc. In our day, however, this creature is better understood, and is seldom if ever mentioned as a disturbing element in the apiary. But locality may make a difference, for in a late number of the *British Bee Journal* the matter of their destruction by means of cyanide of potassium was discussed. They are spoken of as a "plague."

Mr. Wildman inserts a good deal of Latin poetry in the fore part of his book, which might be of interest to those who have a taste for the classics. W. P. R.

Medina, Sept. 8.

RESTRAINING RUNAWAY SWARMS.

THE FUN (?) OF NOT HAVING CLIPPED QUEENS.

If I were to take my choice of running my apiary with unclipped queens or going out of the business, I think I would step down and out. I do not see how any intelligent bee-keeper can run an apiary of 50 or more colonies, and take any pleasure or comfort with unclipped queens. Let me draw you a real picture.

I chanced to call on a noted bee-keeper one day in the height of the swarming season. I found him with an assistant looking over two or three bushels of bees in as many empty boxes and baskets, looking out the queen. At another part of the yard were seven large first swarms that had been clustered for over an hour in the hot sun, just getting up steam to take French leave. Such a time! In less than a minute the whole lot was high in the air. I called to the owner, saying that there was a cloud of bees leaving the yard. He looked up and over in the direction where the bees were, and, calling to his help, shouted, "There, them cussed bees have all left the pear-tree, and ar going for the woods. Hurry up! bring that pail of water! fetch me the looking-glass! get the shotgun! Where is the force-pump? I thought I left it by the wood-shed—run! there, Henry, pelt them with dirt — throw stones among them;" and before the pump could be got in motion or a focus could be got on them by my friend, who was running backward and whirling a large looking-glass over and about his head, or the shotgun loaded, the bees were moving outside of his place and going across a neighbor's rye-field, with a half-dozen wild and excited men hot in pursuit. As they passed the house of the man who owned the rye I heard some angry and crooked language, and I'll "bet a quarter" that, if that man had had all of my friend's bees inside a pile of straw, there would have been a fire, and my friend would have had fewer bees. If those queens had had their wings clipped, would such a state of affairs have happened? No.

Still another, and a picture that is later. Only this past summer one of our neighbors, who is a farmer, and keeps about 30 colonies, lost over 20 nice first swarms of Italian bees that nearly all went in one direction for the hills. Only one of the 20 was found that we know of. The rest, I suppose, found lodging-places, and perhaps will never be heard from.

Does this pay? I guess not; and when he comes to take off his boxes I think he will see the result of these 20 swarms that were lost. Would this have happened if the queens' wings had been clipped? No.

I could call to mind lots of just such pictures as this. Yes, friend Root, I want all my queens clipped as soon as they are laying, and, what is more, I will have them clipped. I always carry a pair of scissors; and every queen I come to that is ready, off goes one of her wings. For the last 17 years I have controlled from one to two hundred colonies, and I have never had a case come under my observation where a queen was superseded on account of her wing being off. I have not lost one first swarm in 17 years by going off; and this season one day I had over a dozen swarms, and I did not sweat or worry one bit. Every one came back to its own starting-point. Yes, I would go out of the

business if I had to run my bees with unclipped wings. N. F. Boomhower.

Gallupville, N. Y., Aug. 21.

LADIES' CONVERSAZIONE.

SCRAPING SECTIONS.

HOW EMMA WILSON DOES IT.

You want to know, Mr. Editor, how bee-keepers scrape sections. As that part of the work falls to my lot I have scraped a good many thousands. Formerly I scraped them on the table. If you set your sections directly on the table to be scraped, you will find trouble in two directions: 1. When you scrape down your section your knife will strike the table, not allowing you to scrape clear to the bottom of the section; 2. The accumulating bee-glue will be constantly in your way. So, instead of setting the section directly on the table I use a block 6 in. long, 5 in. wide, and 1¼ in. thick. Of course, any of these dimensions may be varied. With this block I can rapidly scrape the edges and sides of the sections, clear to the bottom, as the section stands solid on the block, and the bee-glue falls on the table, out of the way. Latterly, instead of a table I use a board, usually a flat hive-cover, holding the board on my lap, the scraping-block on the board. I find it a great improvement. Holding up the arms to scrape over a table is tiresome. It is much less tiresome to scrape in the lap, as the arms hang in an easy position.

Whenever too much bee-glue accumulates on the board, so there is danger of its falling on the floor, I lift the board and dump the bee-glue into a box standing near. For scraping I use a common steel case-knife kept sharp, not holding the knife flat against the surface so that it can cut into the wood, but at right angles to the surface being scraped. While a sharp knife is desirable, a coarse rather than a fine edge is needed. It will pay well to stop and sharpen the knife whenever it needs it. I like to have the sections to be scraped piled in front of me on the table, with the case I am filling at my right hand, sufficiently raised so that I neither have to stoop down nor reach up to put the sections in. Every little extra move counts when doing a hard day's work.

If more than one grade is to be scraped, more than one case must be at hand. As each super is put on the hive, a memorandum is penciled on one of the central sections, giving the number of the hive, date of putting on, and number of super put on that hive. When scraping I keep a cake of scourine handy, with which to remove these pencil-marks. This is easily done by dampening a cloth and rubbing the marks with a little of the scourine.

If I were allowed to select my own time to scrape honey, I would always select a cold day when bee-glue is brittle and easily removed. It is hardly possible to do as good work when the bee glue is warm enough to be sticky, besides being a much more tedious job. It is true, the dust from the bee-glue is worse when cool and brittle, affecting one very much as if he had a hard cold; and people peculiarly sensitive in this direction may prefer to have warmer weather and take the sticky bee-glue in preference to the dust; but I would rather stand the dust.

Whatever may be the advantage of using partly drawn sections left over from a previous year, when it comes to the matter of scraping I very much prefer those that have been on only once. Sections which are left on late in the season are much worse to clean than those taken off earlier.

The way in which sections are put into the super has much to do with the amount of bee-glue on them. They will be more easily cleaned if they are wedged up tight in all directions so that no cracks are left. Scraping a single case of sections may seem to be fun; but when I have scraped 1000 or 1500 in a day it seems like work, and hard work too. I don't know that all of my plans are best, and hope that, in the reports that come in from others, I may get some hints that will make the work easier for me. Emma Wilson.

Marengo, Ill., Aug. 23.

AN OPEN LETTER TO RAMBLER.

SOME GOOD ADVICE FROM ONE OF THE KIND-HEARTED SISTERS.

Dear Rambler:—It will be putting it in mild terms to say that we enjoy immensely following you to and fro in your rambles in the golden State of California, through the medium of Gleanings; but we always think of you as a "poor lone bachelor," subjected to aches and pains, difficulties and disappointments, battling through life on a lonely ranch, without the tender aid and assistance of a noble helpmeet. We can not think of your lonely cabin as being a home, for the organization of a home depends mostly upon the gentler sex, who are especially adapted to the management of the household and the comfort and well-being of man. It is true, wedded life may have thorns and cares; but they are fruitful, while all others are dry thorns. Why, my dear friend Rambler, don't you know that God ordained wedded life, the family, its natural laws, and science? Obeying these laws renders wedlock happy. It is only a breach of them that causes domestic unhappiness. Matrimony would only bring out the better part of your nature, and cause you to cherish and be cherished, while, on the contrary, many good qualifications in a bachelor's life are allowed to sleep a deep sleep. There are plenty of industrious, methodical young women over this vast land who would be very much elated over the espousal of an energetic influential bachelor of your standing, and who would be very agreeable, and make life worth living—who knows how to discharge her household duties in a quiet and easy style, without fuss or dust-clouds, and without usurping authority over man, or causing him to lose his freedom, which some men love so much; and if you should ever be so fortunate as to captivate such a one you would have no more need of brown birds, squirrels, and rabbits to entertain and keep you company in your lonely hours. Why, bless you, matrimony need not hinder you from hollerin' and singin', or stompin' the dust off your feet, or hangin' your coat on any nail you choose. The dear wife would only add a charm to the merriment, and, instead of entering the forsaken cabin (with a big pile of dirty dishes stored away in some corner, a smutty flapjack griddle, a bed flattened by many a night's restlessness, a concrete floor as dirty as mud), you would enter a snug, clean, tidy house, which indeed would be a compensation for your daily toil. You would have no more occasion for eating cold potatoes, cold pancakes, cold coffee, etc. You would find a genuine art displayed in getting up your repasts. Labor and toil would then be linked with pleasure and happiness; and the very atmosphere around your cabin would be sweetened. This is no humbug. I know whereof I speak. Anonymous.

MRS. HARRISON'S NON-SWARMING BEES.

WHY THEY DON'T SWARM, ETC.

Mr. Root:—Perhaps some of your readers would like to know that I've a strain of non-swarming bees, and I've had them on trial for four years. Previous to this time I had to get around lively during swarming time, but of late years I've had it easy—plenty of time to swing in the hammock and read about what other bee-keepers are doing.

LIGHT HONEY-CASES FOR WOMEN.

I've lots of 'em. A child can lift them, and they do not need a bee-escape either. Lay them down on the grass; they will not get damp, for it is brown and sear.

WOMEN AS BEE-KEEPERS.

Any woman can *keep* bees like mine. Let them have their own way; that is the way I have done this summer. I furnished a receptacle, and asked them if they would please to give down a little extracted honey after basswood passed by. They gave me a three-gallon jar full, which I prize highly for cakes, company, and coughs.

I've been resting upon my honors as a bee-keeper for the fourth season, and there is another in prospect, for white clover can not stand such severe drouth. I look out from my window upon a beautiful May cherry-tree. The spray is fine; I can see it distinctly, for the leaves have nearly all fallen. The ground under the green ash is covered with dry leaves. How they rustle under my feet! Very fine dust can now be gathered for the fowls to dust in during the coming winter. Every leaf and twig is covered with it.

COOKING WITH HONEY.

What extravagance! I'll be satisfied if I can get honey for the outside of my cakes, and not the inside. Cooking with it is one of the lost arts. MRS. L. HARRISON.

Peoria, Ill.

CHOCOLATE CREAMS.

CARPENTER BEES.

Take one pound of granulated sugar and one teacupful of water. Stir together until the sugar is thoroughly moistened; then place over a hot fire, and boil without stirring until a few drops dropped into cold water will retain their shape and not mix with the water. If it gets crisp in the water, it is overboiled and must have a little water added and be tried again. If it mixes with the water it has not boiled enough. By a little practice you will learn the exact degree; and when this is reached, the sauce-pan must be immediately taken from the fire and set in ice, snow, or very cold water, that the candy may chill quickly, as the candy changes rapidly. When the candy is cool enough to bear your hand in it, begin to beat it with a spoon; then, as it stiffens, with the hands, working it as if it were bread dough. Work about 10 minutes or until it is smooth and shining. Flavor with a teaspoonful of vanilla as you work it; then form it into balls, and dip into chocolate prepared as follows:

Take a piece of unsweetened chocolate and melt it in a cup. Soften it by adding a teaspoonful of water, and then add of the cream until it is fairly sweetened. Set the cup containing the chocolate mixture into a bowl of hot water, and dip the balls into the mixture one by one. The sugar and water should be boiled in a thick sauce-pan, and should *not* be stirred once while boiling, as that would make it coarse-grained.

The above recipe and directions were given me several years ago by a confectioner whose candy-kitchen was located in a building at the rear of our hardware store. His stove had a habit of "balking," and on such occasions he would bring his candy over to our store and finish it on a gasoline-stove which we kept filled for exhibition purposes. As the stove stood beside my desk I had a good opportunity to observe him while at work. I do not think that he ever boiled over three pounds of sugar at one time, as he said a larger quantity would not chill quickly enough to prevent the candy from changing. In testing it he disturbed it as little as possible, merely dipping the spoon into the top of the boiling mass.

While preparing some candy for the holidays last year we were interrupted by callers, and the candy was taken from the fire too soon. It was so soft that it could *not* be worked with the hands; yet after hard and continual stirring with a spoon it became smooth and shining, but it was of the consistency of very thick molasses. As it was entirely too soft to mold into balls we planned to make cocoanut creams of it by stirring in shredded cocoanut; but being interrupted again, the candy was placed on a shelf of an unused cupboard, there to repose, forgotten, for a couple of months. When finally it was remembered, and the dish containing it brought forth, it was found to be soft and moist, with a thin glaze or film of hardened candy over the top. Beneath the film the candy had thickened somewhat; for, on turning the dish sidewise, it would not run out, but just tremble, as thick jelly does when the dish containing it is turned. It is said that chocolate creams improve with age, and this candy certainly did, for it had a fine flavor not possessed by fresh candy.

I believe that those insects which Mrs. Axtell inquires about, page 499, July 1, 1892, were bees. As this is a timberless country, absconding swarms take possession of abandoned cayote-holes and such other holes as are found among the bluffs and in the tablelands. There is a sort of bee here which resembles a bumble-bee in every respect, except that it is smaller, probably not more than one-fourth as large. It makes the same "hum" as a bumble-bee. It works in holes in old sod houses. The holes are just large enough for it to pass through. It appears to work singly and not in swarms. I mean by that, that I have at different times watched holes from which a bee had passed out, but no other bee passed out; and after a time a bee returning would pass in; and, after remaining in some little time, it would pass out again. While it remained in the hole, no other bee passed in. The holes are usually situated just under the eaves. They are not cross. Not one has ever offered to sting me, and I have dug into their holes quite a little way; but I never reached the end of the passageway, therefore I am not able to say whether they store honey or not. There are but few bumble-bees here. There is also another variety of wild bees here. They are small and woolly, and are called black bees. We have never had the common black bee in our apiary, nor have I ever visited one in which they were kept, therefore I do not know whether they are the same or not. When transferred to a hive, the wild black bees are said to store more honey than the Italians in the same apiary. LONA H. BOHRER.

North Loup, Neb., Aug. 7.

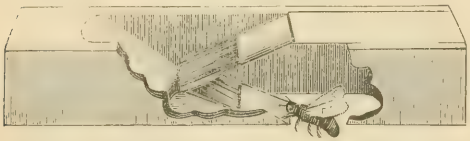
[Bees described in your last paragraph are evidently carpenter bees.]

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

ALDRICH'S BEE-ESCAPE.

I send you by mail to-day a new bee-escape which I devised. If you find it worth while to tell us what you think of it, I shall be much obliged. If not, all right. With me it works to perfection. The block I send you is designed



to represent a board. The escapes can be made for ten cents apiece. CYRUS C. ALDRICH.

Morristown, Minn., July 19.

[We have no doubt that the escape would work nicely. Whether it would be cheaper than the Porter, which we know gives satisfaction, we can not say.]

PECOS VALLEY; A REPORT FROM ONE WHO LIVES THERE.

There have been great fradulent advertisements gotten up regarding the Pecos Valley, which is a great ruin to many people who leave their homes and come here. Will you publish a true description of the country if some one will write it up? These fraudulent advertisements are gotten up by land agents who are robbing many poor people. G. W. WOOD.

Monahans, Texas, Aug., 1893.

[Yes, certainly.]

OIL-STOVE TO KEEP HONEY.

Can any one at the Home of the Honey-bees tell me whether or not the gases generated by oil-stoves will have any deleterious effect on comb-honey? My honey-room shows a tendency to dampness, which, as you know, is ruinous to honey stored for any length of time. Heretofore I have overcome this fault by keeping a small wood heating-stove in the honey-room; but as a wood fire needs almost constant attention I have thought of replacing it with a kerosene-burner. F. M. CRANE.

River Sioux, Iowa, Aug. 11.

[This was forwarded to Dr. Miller, who replies:]

I don't think an oil-stove is a fit thing to be in a room where people want to breathe; but I doubt whether it would have any bad effect on honey. A small cylinder stove with hard coal might please better, and is very little more trouble.

EXPERIENCE WITH BEE-PARALYSIS; SALT A DOUBTFUL CURE.

A. I. Root:—At your request I write to report my experience for the last 12 months with bee-paralysis. One colony, purchased from a dealer in South Carolina, brought the disease into the apiary. It spread from one colony to another until, by the close of last year, it had infected all but two. At times the dead bees were strewn very thickly over the ground in the apiary, and it seemed as if every colony would perish; but the loss at last was only one. Many were so weakened that they barely survived last winter. The disease broke out again in the spring, and showed itself in nearly every hive during the honey season, but gradually disappeared, until now there is only one that appears to be infected. The only remedy used was a handful of salt, thrown early in the spring on the bottom-board. In wet weather the salt would melt, and the bees had to wade through salt water to get on the combs. In dry weather the water would evaporate, to reappear again with a damp atmosphere. At this season the salt is promptly removed by the bees; but in the spring they did not do so. The salt thus applied may have had something to do with the cure, but there is room for doubt.

Our honey-flow in the spring was lost by reason of the constant rains from April 20th to May 15th. Extracting from some ten colonies, and from the super only, there was a yield of about 150 lbs. of dark honey. The extracting might be repeated now with a similar result, but the surplus is reserved to build up weak colonies this winter. T. S. FORD.

Columbia, Miss., Aug. 11.

PROBABILITY OF SWARMS UNITING WITHOUT QUEENS.

Referring to Mr. Major's item on page 652 of GLEANINGS, you will see that he says nothing about swarms *uniting*—it is in regard to their *returning*. A swarm out *alone* almost invariably returns to its own hive or location. With only 40 colonies there would not often be several swarms out at the same time. I should like to have not only Mr. Major but any one else say, if two swarms are out at the same time, they are not almost certain to unite, and, after they are united, do they ever separate, except to a small extent, and return to their respective locations? In my experience, swarms without queens with them are *more* likely to unite than are those with queens. They spread out more in hunting for their queen, and remain longer in the air without attempting to cluster; besides, they are in a mood to join any thing or anybody with the hope of getting a queen.

Flint, Mich., Aug. 18. W. Z. HUTCHINSON.

[It is true, that Mr. Major does not say in just so many words any thing about two or more swarms uniting; but we feel quite sure that he implied that, or, at least, had it in mind, because, you will observe, in his last sentence he says, "I can not see why Mr. Taylor's bees should act so differently from mine;" for Mr. Taylor said his bees without queens united, or were quite inclined to do so; and Mr. Major says his bees did not do that way. If we misinterpret him we should be glad to have him correct us.]

THE LANGDON NON-SWARMER NOT A FAILURE.

I have visited apiaries, and seen frame hives filled with bees and honey, with the frames all at one side of the hive, or the combs built crosswise of the frames, etc. Now, would you condemn a frame hive because a few had failed with them? Certainly not. I used 18 of Langdon's non-swarmers this season, and I think I secured honey enough more with them to pay their cost. I did not succeed as well with them as I hoped to, and I think my lack of success was due to myself, or partially at least. I did not get the non-swarmers attached to the hives until the bees were about ready to swarm. They had the swarming fever on, consequently some of them swarmed. I then moved the hive that the swarm came from, to a new location, and put an empty hive, or one filled with full sheets of foundation, in its place, with the supers on, and hived the swarm into it, and had no more trouble from their swarming. Such swarms worked well, and I got nearly all my surplus from them. Colonies that I put the attachment on before they got so near ready to swarm did not swarm.

I had no trouble from swarms smothering. I

do not see how such a thing could happen unless the hole in the hive did not match the hole in the non-swarmer.

Sealed covers are not a failure, but we want plenty of bottom ventilation, and enough packing on the sealed cover to keep it warm. Then we shall not be troubled with dampness or mold. EGBERT R. MAGOON.

Malone, N. Y., Aug. 22.

DRONE-CELLS VS. QUEEN-CUPS; FURTHER EXPERIENCE SHOWS THEM TO BE A COMPLETE SUCCESS, SAYS J. D. FOOSHE.

I mail you three cup queens by to-day's mail. These queens are as fine as I can raise in the swarming season. I have no doubt now about the drone comb for cups. I had about 200 wax cups on hand when I found it out, but have never used one of them since. The bees never tear them down in upper stories as they sometimes do the wax cells. I was troubled a good deal with that with the wax cups. Bees will build cells or larvæ in any kind of cells, when they are in proper condition—that is, queenless and broodless, whether there is jelly or not; but the jelly facilitates the transferring of the larva so much that I would not dispense with it; and then the bottoms of the cells are so thin the larva on the end of the instrument used will not come off without a little pressure, which is liable to puncture a hole in the bottoms of the cells; but with the jelly it takes off the larva. I am elated with this plan, as it does away with making cups, which took a good deal of wax. J. D. FOOSHE.

Coronaca, S. C., Aug. 25.

[A full description of the drone-comb plan referred to by Mr. Fooshe is given on page 635 of our Aug. 15th number. It strikes us that our correspondent has contributed something exceedingly valuable and practicable; and were our own queen-rearing operations not at the close we would try it in preference to any other method that has been produced.]

SERIOUS RESULTS FROM A SINGLE BEE-STING.

The following, clipped from the *Express*, of Monticello, Ia., under date of Aug. 11, gives another example of the occasional serious effects resulting from a single bee-sting. Why do we publish it? Simply because we wish to give the bad as well as the good—indeed, the whole truth.

Miss Jeanette Himebaugh, a young lady, the daughter of Mr. and Mrs. Geo. L. Himebaugh, who lives four miles south of Monticello, was nearly killed by the sting of a bee last week. Within five minutes after being stung she was in spasms, and there was little hope of saving her life. She was in the yard when stung, and started directly for the house, with the exclamation that she had been stung by a bee, and that she felt its effects through her entire body. Before she had walked three rods she needed the assistance of her mother, who laid her upon a sofa, and, to the horror of the members of the family present, she was attacked by spasms in a few minutes. These were so violent that it was not supposed she could live until a physician could be summoned. Her uncle, however, started to Monticello for a doctor and in less than an hour from the time of the stinging, Dr. Mirick was at the side of the unfortunate girl. Ten minutes before his arrival, Miss Himebaugh revived sufficiently to whisper the request that her arms be put about her father's neck, but she immediately relapsed into an unconscious condition, and the doctor found it was impossible to force any medicine or stimulant into her mouth. Antidotes and remedies were administered by means of hypodermic injections into the arm. She was wholly insensible to the pain thus produced; but after a time the medicine thus injected into the blood took effect, and the jaws relaxed sufficiently to allow the administration of brandy. After three hours of work, Dr. Mirick brought the patient out of danger. She was abed for several days. Mr. Himebaugh, in speaking of the matter, says that the poison acted much like a rattlesnake bite, and that the treatment was much the same as pursued in such cases. Miss Himebaugh was stung directly over the eye, but not until after her return to consciousness was the locality known. Her hands and feet commenced to swell immediately, but the wound did not commence swelling until a day or two later.

We are assured by a subscriber that the facts are correctly stated. This does not prove that the bee-business is a dangerous one, any more than it would argue, on a similar line, that horses and railway trains are dangerous because of the occasional deaths which they occasion. It simply goes to show that there are some people in rare instances who are affected very seriously.

Following the above is an item which we clip from the last issue of the *American Bee Journal:*

The daughter of Mr. J. E. Frith, Secretary of the Oxford Bee-keepers' Association, living at Princeton, Ont., died suddenly after having received a bee-sting on the temple.

REPORTS DISCOURAGING.

My bees have not made any thing for four years; and the prospect is, they won't get enough to winter on, as it is so dry the Spanish needle is almost all dead, and that is our only source here. LUKE SNOW.

Lamar, Mo., Aug. 11.

This has been a very poor season for bees here. I have not used a section that I got of you. I had 45 stands in the spring, and at present I have 70 and little honey. Bees will starve in the spring if there is no feeding done.

Deshler, O., Aug. 28. THOS. OBERLITNER.

I had 50 colonies, spring count, and they have not stored one pound of surplus up to date, and at present there is *very little* honey in the brood-chambers, and I had but one natural swarm. If they get no honey from fall flowers I shall have to feed sugar syrup.

Brookfield, Mo., Aug. 17. J. D. BLOOD.

Bees did very poorly this season in this part of the country. They scarcely made a living after July 1st. The drouth was partly the cause. It was the poorest season in four years. I went into winter quarters with 48, and lost all but 3 in my old reliable chaff hives.

Portage Creek, Pa., Aug 29. R. R. WELLS.

The honey crop in Northeastern New York is poor—not any better than last year: the same in Vermont, so far as I can learn. There were lots of clover-blossoms, but the dry weather cut the crop short, and basswood did not amount to much. Others are giving such good reports through GLEANINGS I suppose commission merchants will take advantage of it and start the sale of honey low. E. L. WESTCOTT.

Addison Junction, N. Y., Aug. 21.

I see in GLEANINGS reports of some wonderful crops of honey in nearly all the Middle and Western States, but can find nothing from the South. The crop has been a complete failure in this immediate neighborhood, and I should like to know how it is in other parts of the Southern States. I got about 150 lbs. of honey from 50 colonies. The very few other bee-keepers in the county have fared about as well.

Americus, Ga. D. P. HOLT.

[The season has been poor throughout almost the entire South.]

NOTES OF TRAVEL.

ON THE WHEEL.

Ever since our Ohio Experiment Station has been moved from Columbus, O., into our neighboring Wayne Co., bordering us on the south, I have proposed paying them a visit; but I never got around to it till Thursday, Aug. 31. I started about 6 o'clock in the morning, and reached Creston, Wayne Co., between seven and eight, where I stopped to visit the celery and onion farm of Johnson & Jordan. They work for the early market on celery, and succeed in getting three crops on the same ground in a single season. They use boards for bleaching the first and second crops. These are one-foot boards, set on edge each side of the plants, and held by bits of wire bent like this [, the wire being long enough to draw the boards up close against the celery. The White Plume and Self-blanching are the kinds generally bleached between boards. About the time the boards are put up to the first crop (which comes off about the first of July), another crop of celery is put *between* the rows, the rows being set in the first place three feet apart. When the first celery is taken from the ground, the boards are moved away, and the place where the first crop stood is thoroughly cultivated, and the ground stirred clear up to the new plants. Of course, the hands have to be carefully trained in order to avoid stepping on the new plants while they are working with them, and taking up the old. In fact, the boss himself will tramp on the new crop if he does not mind where he puts his feet. Of course, in getting three crops off the same ground in one season there has to be heavy and constant feeding of the soil, and water applied whenever it is dry. As they can not get stable manure for their many acres of celery, they were using, when I was there, finely ground bone and phosphate mixed together. To apply this to the growing plants, the ground was pulled away by hand cultivators, or otherwise, until the roots of the plants were visible. Then the bone and phosphate were sprinkled in this trench. Lastly, a stream of water from a hose was turned on so as to fill up the trench completely; and then the dirt was thrown back, some fine dry soil being put over the wet surface so as to prevent baking. I told them my impression was, that bone would hardly act so soon as to do the crop that it was applied to much good; but they assured me that, where it was applied, the celery was much larger, and they could see a difference in eight or ten days. Now, mind you, during our recent drouth they had been putting on the water quite liberally; and this very thing which faces us right here troubles me exceedingly. I asked them if they had tried the phosphate and bone without water, or the water without the fertilizer. They said they had not. All together it did the celery good; but it was not clear to me whether the phosphate and bone had any thing to do with it. Water alone would certainly have produced a marked result; and even plowing away the dirt so as to expose the roots, and putting it back again, would of itself produce a considerable result. You see, we are doing a great amount of labor, and we are putting on different fertilizers; and yet who can tell us whether it is stirring the soil, putting on the fertilizer, or adding the water, that produces the result? I submitted the matter to E. C. Green, of the Ohio Experiment Station, in the afternoon of that same day, and he told me this was just what our whole country greatly needed—decisive experiments in lines like this. Now a word about the water:

Their swamp has ordinarily been too wet; and, in fact, for crops where the roots get clear down, like corn and cabbage, it has been just about right during this dry season. But for celery, especially when the plants are first put out, water is an absolute necessity. They pump it up into a big tank by means of windmills; and then, by means of iron pipe and hose, they carried it all over their grounds, running it in a little furrow close to the row of plants. But during the past drouth the windmills were inadequate. They were only ten-foot mills, however; and to back up the mills they were using a little steam-injector run by a ten-horse boiler borrowed from a thrashing-engine. This injector would raise, perhaps, ten feet high into a tank 30 or 40 barrels an hour, and they thought it was cheaper than any sort of pump. With a pump there is machinery to get out of order, and wear. The injector, however, had no machinery about it, the steam acting directly on the water. Of course, it warmed the water a little, but this was all the better for watering the plants.

I found them selling their refuse stalks, or trimmings, for 50 cts. a bushel, for pickles. The latter price was where the trimmers pack it up in bushel boxes. If people come and pick it up from the refuse heap, the company gets 25 cts. a bushel; and people were there all the while, and took away the trimmings just about as fast as they were thrown down by the packers. They get 20 cts. a dozen for their celery packed in cases, ready for shipment; and it retails two stalks for a nickel.

All around the city of Wooster there are immense hills. By 11 o'clock I began to feel tired, hungry, and considerably longing for my accustomed nap. I had already ridden 20 miles since breakfast, and I thought I would keep on just five miles more; but I began to meditate, that, if I did, I should get there pretty well exhausted; and I believe we ought to avoid such exhaustion all we can — especially where we have been invalids. On the top of the hill I came to Madisonburg, a cosy little town of half a dozen dwellings, with one which seemed to be a postoffice, grocery, and general store combined. I asked a boy if there was a hotel in the place. He shook his head. Said I, "Is there not a place somewhere in the town where I can get dinner?"

He put his head into the store, and finally replied, "I guess you can if you will eat a cold dinner. We don't have no cooked dinners nowdays."

Then I petitioned first for a place to lie down fifteen or twenty minutes. This was granted at once, and I was shown into a rather pretty sleeping-room; but the furniture was mostly of a masculine character, notwithstanding the bed was nice and clean, and in a few minutes I was lost to hills difficult to climb, and every thing else. At the end of the appointed twenty minutes I opened my eyes and began to speculate, as I often do under such circumstances:

"Well, old fellow, where are you *this* time, and what are you doing *here*, any way?"

I rubbed my eyes, and gathered up the broken threads where I left off. Pretty soon I opened the door, and announced myself ready for dinner. The proprietor of the store looked a little troubled, and said he did not know what he had for dinner, after all, unless it was what they had on the shelves.

"Well, give me some crackers and cheese, if you can't do any better."

"Well, to tell the truth, stranger, the cheese is just out."

"Then let's have the crackers," said I.

He rubbed his head with his hand, and then replied, "Well, the fact is, the *crackers* are just

out too, unless you want some of those sweet ones;" and he pointed his thumb at the glass cases containing crackers upon the shelf. Now, I never liked sweet crackers, and here was a dilemma. Pretty soon my eyes rested on a case that was labeled "Pretzels;" and there, sure enough, were the crooked things right up against the glass. When I recovered from that spell of fever, one of the first things the doctor prescribed for me was pretzels and cold coffee, half milk. They allowed me to have these five times a day, and I used to think them the most delicious food in the world when I was so hungry. I instantly replied, "Oh! you have got some pretzels—hand them down." Next I espied some ten-cent boxes of sardines; and with the help of the good appetite given me by my brisk riding, I made a very satisfactory dinner on the pretzels and sardines. There is a moral right here, and I guess I will whisper the moral to the good housewives who may happen to read these pages. If your husbands are in the habit of finding fault, and complaining of the bill of fare, just get them to riding a wheel, and then you will see them thankful and happy —yes, in a frame of mind to give thanks to God, even if they should not happen to have any thing better for dinner than crackers and sardines. This matter of going to the expense of purchasing a wheel confronts me constantly; but a great many times a wheel will take the place of a horse, or a horse and buggy both; and when we consider that the expense of keeping a wheel is nothing to that of keeping a horse, it may not be such a piece of extravagance after all; and when the women-folks get to riding, as they are here in Medina, one wheel belonging to a family, and so arranged that it can be used for men and women both, it seems to me such a wheel might many times be a saving of expense instead of being considered an extravagance.

I pulled out some money, and asked the storekeeper how much I owed him.

"Just 23 cents."

I gave a whistle, and said, "Why, didn't you forget to charge me for my bed?"

"Why, I didn't expect to charge any thing for that; but if you have a mind to, you may make it an even quarter."

Now, who will say this is a hard world to get along in? This man had not even learned my name; and yet, after having shown himself so neighborly, and bidden me make myself at home in his bachelor quarters, he consented to accept the *two cents* odd change for the accommodation! If I had gone on four miles further, and asked permission to lie down, even on a lounge, in one of the large hotels of the city, the charge would have been 50 cents. Give me the country, or little town, even if the postoffice, store, and grocery *are* all in one.

I passed through the beautiful city of Wooster, stopping again and again to admire that grand-looking pile of buildings called the Wooster University, which is set upon the hillside so that it is not only a conspicuous object, but a thing of such beauty that it is a joy to the beholder for miles and miles in every direction. When I was half way up one of those longest hills south of the city I decided to wait till the man who was before me should come up, so as to inquire of him where E. C. or W. J. Green lived. Did you ever! It was E. C. Green himself! That was one of the happy surprises that I blunder into now and then. I was tired enough to accept his invitation to load my wheel into the back end of his buggy, and then he turned around and went *up* hill instead of down. He evidently divined that I would want to visit their new greenhouses first. There are four of them, and they are something over 100 feet long, and perhaps 20 wide. They are built with the intention of testing every thing belonging to greenhouses, evidently. For instance, one house has the glass lap; another butted, and so on; one house has the "meat-saw" ventilator; another the Hibbard, and the other some other; and I was greatly pleased to be able to put my hand on the cranks, and raise the sashes by all of the modern methods of raising and lowering sash. The heating is to be done on a similar plan; also the watering; and I saw beds made expressly for sub-irrigation, others for sprinkling, etc. Finally I heard something said about the Rider hot-water engine that pumps the water from a deep well into the tank elevated above the buildings. A brand-new machine has been recently set up in the basement, and the courteous and obliging engineer fired it up expressly for my benefit. It will pump ten barrels of water an hour, elevating the water something like 100 feet, and the expense is only 2½ cts. per hour, even when run by kerosene oil. Now, here is a triumph of genius. A six-horse-power engine can be run at only 2½ cts. an hour (cheaper still, I suppose, if coal is used instead of oil), and yet there is no boiler nor steam—nothing to explode nor blow up; no water-gauge, safety-valve, nor any thing of the sort. I believe these engines are mostly used for pumping, or for something where no great amount of power is required. One of them is used, I am told, in Wooster, for running a printing-press. When you want to start it, you take hold of the fly-wheel and set it going. When you want to control the power or stop it, turn off the oil. After the apparatus is fully heated up, however, it will run for fifteen or twenty minutes after the fuel is cut off entirely. It is very simple, clean, and neat. I was not able to learn the cost. Finally some one came in to say that the engineer was to keep on pumping, for they wanted considerable water for the steam-ditcher.

"Steam-ditcher, did the man say? Why, friend Green, have you really got a steam-ditcher at work on your grounds?"

"Why, yes; and that is one of the things, Mr. Root, that you want to see," and so we started off across the fields. But this paper is getting to be so long I think I shall have to tell you about it in our next.

OURSELVES AND OUR NEIGHBORS.

For the Lord thy God bringeth thee into a good land, a land of brooks of water, of fountains and depths that spring out of valleys and hills.—DEUT. 8:7.

And Isaac's servants digged in the valley, and found there a well of springing water.—GEN. 26:19.

And the Lord shall guide thee continually, and satisfy thy soul in drouth, and make fat thy bones; and thou shalt be like a watered garden, and like a spring of water, whose waters fail not.—ISA. 58:11.

Perhaps it is the present severe drouth that still prevails that has set my mind to running so much on springs of water; and very likely it is owing to the fact that I have been somewhat out of health, and find it difficult to drink to my heart's content, unless I can find very pure water. This latter has induced me to rejoice when I have found springs and wells of pure soft water in my various trips on the wheel. There is one locality in Medina Co., about ten miles from my home, where I especially love to go. It is in the vicinity of a natural curiosity called Spruce Run. A few weeks ago two of our Sunday-schools here in the village held a picnic in that vicinity. I had told the boys in

my class something of the springs of pure water and the wonderful caves—not very extensive ones, it is true, but wonderful to myself and a class of urchins about a dozen years old, notwithstanding. Dinner was served near an immense spring that comes out of a cave on what is called the Waltz farm; but as the gorge called Spruce Run was almost a mile away, over a very rough country, it was thought difficult and dangerous for the greater part of the women and children. After the repast was over, however, I called for volunteers for an exploring party; and a great crowd, not only of boys but of girls also, and many women, followed. I first directed the boys to let the fences down very carefully, and showed them how to take the fences down without injury to the fences or the property where the owners had been kind enough to permit us to pass through.

It was a hot day in August, and all hands were almost as enthusiastic as myself in regard to finding springs. We first started in at the source, or near the source, of Spruce Run. A little rivulet commences cutting down gradually into a level field. In a little time it strikes sand rock; and as it cuts its way down into the rock, various springs start out and unite with the stream. The first one we found trickled out of the stone formation, perhaps two or three feet above the bed of the stream. I have many times decided that I will be sure *next time* to have plenty of tin cups when I start out on a trip like this; but, as usual, the ones who carried the cups had strayed somewhere else, and all we had to quench our thirst from was a little gem of a tin cup holding perhaps half a teacupful. I held it under the stream of cool soft water until full, and then passed it around; but it took so long to give all a drink that the first one wanted more by the time we got around, and so we might have stayed there all the afternoon. We finally decided to wait for a larger spring before fully quenching our thirst.

A few rods further down, and the stream has cut in so deeply that even the schoolboys of our crowd were unable to climb up the rocky sides. Further on, the cut became a gorge, or "canyon," as they would call it in California, and the cliffs were really dangerous. In fact, in some places the perpendicular sides seemed almost to come together overhead, while beautiful ferns and green vines and mosses started forth from every crack and crevice, making a most luxuriant growth, assisted by the spring water, and cutting off the light from overhead until it was a wonderfully cool and cavernous retreat on that hot summer day. Further down we came to a waterfall that had worn for itself a basin in the rock that has for years been called the "Bottomless Pit." I presume, however, the ground they had for terming it "bottomless," was, that one could not touch bottom in some places with a fence-rail of tolerable length.

A little below the fall we have what is called "Table Rock." The water had cut under until the sandstone cliff had broken away from the main rock, and stood aloft in the air, the only means of access being a bridge made of a couple of poles. Table Rock is large enough to contain some good-sized trees; and at the bottom of the chasm made by the breaking-away is a pathway carpeted with leaves and soft mosses. Dark caverns abound here and there in this vicinity; but none of them go in very far beyond where daylight reaches.

It had been reported that there was a wonderful cave somewhere in the vicinity, that, in earlier times, used to extend a quarter of a mile or so into the hills, but I had never been able to find it; and, besides, at some recent date a fragment of rock had broken off and tumbled down, closing the passageway. I had made a good many inquiries, and tried to find it myself. On one occasion I found a fissure in the rocks, where I could, by listening, hear the splashing of a waterfall away off at its further end. Not having lights with me I pushed on in the darkness to get a drink of the delicious cool water; but the passageway finally grew too small for me. The boys were full of enthusiasm to explore these caverns; and after we had gone through Spruce Run they volunteered to follow me on some explorations. A woman who lived in the vicinity said she knew where the cave was which we wanted to find; but the day was too hot, and she was too old for such a tramp. Her daughter, however, 16 or 17 years old, thought she could direct us; but she evidently felt a little backward about such a scramble through the brush and over the hills. Finally a young man was found who admitted he could pilot us to the spot, but he threw in a little discouragement. Two boys had started out about a year ago, just as we were doing, and they spent some little time in the cave; but one of them *died* shortly after. I looked at the boys inquiringly after this piece of news, to see whether they would want to push ahead. Their verdict was quite unanimous.

"Go ahead, Mr. Root. If you lead we will follow, and the cave won't kill *us*, you bet."

So we pushed on. The weather was so warm, and climbing the hills so fatiguing, that it is not any wonder if the whole crowd of us were pretty thirsty all the time; and as we neared the spot, on looking about we saw quite a few of the girls and even some ladies slowly bringing up the rear of the procession. The entrance to the cave was in the side of a cliff on the hillside. The water had cut a sort of slit in the rock; and where it came out it was entirely too narrow for even the smallest boy to get through. By climbing up a little distance, however, the opening was wider, and one after another we got inside; and when once through the opening we climbed down to the floor and found ample room for the whole crowd. Then it became evident that, if we went further, we should have to have a lantern. What would the mothers say if I should lead their boys off into a wild cave like this, and they should become lost in some subterranean chamber, such as we read of in the vicinity of Mammoth Cave? I told them that we should have to have a lantern before we could think of going beyond where the glimpses of daylight reached; and almost as soon as I mentioned it there was a volunteer to go to the nearest house, about a quarter of a mile away, and borrow a lantern. Something was said about matches, but one of the boys said "Johnny" had some in his pocket. While we were waiting for the lantern, as our eyes became accustomed to the gloom we found we could see a good deal. The floor of the cave was covered with beautiful grayish-white sand. The shallow streams of spring water were deliciously cool as they passed over this sand. Somebody found a broken crock; and by sinking it into the sand we got some of the water to drink. The tin cups were all gone this time—even the diminutive one. Almost as long ago as I can remember, I have greatly enjoyed drinking water from a piece of broken crock. My earlier days were passed in the vicinity of shops where crockery was made; and all around Mogadore, Summit Co., O., as every one knows who has been there, there are springs of soft water gushing from the sandy and gravelly hillsides. These drinking utensils of broken crockery were usually left in the spring; and the stone surface, as one presses it

to his lips, is deliciously cooling. Now, this fragment of crockery that we found in that cave, even though it held only about half a teacupful, seemed to me to furnish about the most delicious beverage that it has ever been my pleasure to taste; and I rather think the boys thought so too by the way they kept passing the dish from one to the other. Pretty soon there was a hurrah as the lantern was passed in.

"Now pass along your matches," said I. But the reply came,—

"Why, I have got some matches, as I said; but they are in my coat pocket."

In the scramble through the woods the boys had taken off their coats.

"All right; but where is the coat, Johnny?" said I.

"The coat? Oh! that is hanging up on the tree over there where we took dinner. Don't you know, Mr. Root, you urged us—every one of us—to take off our coats and hang them up before we started out?"

There was a big laugh all around at this. Wasn't that an excellent specimen of boy logic? And here was a predicament. Here we were, a pretty fair-sized Sunday-school, crowded into the dark cave with a *lantern*, it is true, but "nary a match." Another boy was sent off to get some matches; but by this time I was a little impatient about the delay as well as the rest; so I told the boys that those who were barefooted might push out in the dark, providing they were very careful not to slip or fall, or get out of hearing distance. In fact, I kept talking to them as they crowded back and explored the various crevices and openings through the white sandstone. Sometimes the passage went down quite steep, and again we had to climb up; but before the lantern reached us we had explored every passage except one. Pretty soon somebody sang out, "Light is coming!" and then we made the cavern ring and echo again with our hurrahs for a real *lantern* with a burning *light* inside. After the whole crowd had pushed off up into one of the passages where it was dry, the music-teacher struck up

"Rock of Ages, cleft for me!"

and, wasn't it grand! Then we took another drink from the broken crock; but I stayed after all the rest, dishing up the water; but even then I did not get enough. I am going some day to that cave again, and you may be sure I shall have a tin cup large enough so that I can drink to my heart's content from the cooling and life-giving waters.

After we emerged from the cave, in order to make a short cut to the dining-place we ascended an immense hill. It is, perhaps, one of the longest hills in Medina Co.; and when we reached the top we were rewarded by a most magnificent view. On the north and west was the valley of the Rocky River, with its green hills and beautiful farms dotting the hillsides. On the south was the valley of the River Styx, and so on clear around on all points of the compass. I told the boys that "down east" the Boston folks call themselves the "Hub of the Universe;" but it seemed as if this hill was ahead of Boston. At a farmhouse, right on the summit, our pilot informed us there was a well over 100 feet deep, cut full size clear down through the solid sandstone. It was made years ago, before bored wells were much known. Two buckets were arranged on a chain, to bring the cool and sparkling liquid from the lower depths; and it took a pretty good boy to pull the bucket with its weight of chain when it first started up. Our small tin cup had been brought to light; but as there seemed but little prospect, by the way things were going, that they would get around much before night, I went over to the well to interview proceedings. One boy had the small cup; and while his thirsty companions looked on with envy he took sufficient time to drink *three* cupfuls. Near by were some stone milk-crocks. They were of the kind that are white on the outside and black inside. This black glazing has a shiny, sparkling appearance; and whenever I see a piece of crock of this kind it always makes me thirsty, because it is the kind they used to make in Mogadore—the very kind we used to have around those springs. I took out one of the smallest milk-crocks and poured it full, and then passed it from one boyish face to another, telling them meanwhile that this water was not only the purest and coolest and most delicious in the world, but very likely it came from one of the deepest wells in Medina Co. Well, pretty soon I found that even the tin cup with the help of the gallon crock was not going to furnish water as fast as they could drink; so I borrowed another crock and put a stout boy at the windlass; and then when a party of ladies came up I borrowed *still* another crock; and, oh! but didn't we have fun drinking that cool spring—no, no!—not *spring*, but *well* water, pulled to the surface with two veritable "old oaken buckets"!

Now, friends, I am making quite a long story in order to make my point. I am sure those children, as well as myself, enjoyed that pure soft water more than they would have enjoyed any kind of beer, soda-water, or even lemonade, and a thousand times more than they could have enjoyed any intoxicating drink. And if my story has made you thirsty for just such pure spring water, then I have accomplished my end. In climbing hills and taking such rambles as this, I believe almost every one can drink freely of such pure soft water, provided he keeps on climbing. Were one to drink to excess, perhaps, *after* such a tramp, and then sit down or lie down, the consequences might be unpleasant; but I am sure not at all so if he keeps on with his ramble. Another thing, I am quite certain that there are few people who can drink hard water, or water impregnated with any mineral substances, as they can soft water from these sandstone rocks. Again, I have told you many times before that such rambles and such great quantities of pure water are, to my mind, one of the best medicines for old and young that this world affords. Perhaps there are those in strong and robust health who take water from hard-water wells and springs just as well as the pure soft water; but I am sure it is not so with those whose health is poor. In my various wheel-rides through the northern part of the State of Ohio I have learned to my sorrow that it will not do for me to drink freely of hard water; and so many others agree with me, that I do think better provision should be made for furnishing soft water to people who can not drink the other. In old times the man who dug a well for the convenience of the people was considered a public benefactor. You remember what the Bible says about the well that Jacob dug; and in one of our texts we are told that Isaac's servants found, by digging, a well of springing water. The margin calls it a well of "living" water. Now, we want ever so many more of these. Our temperance people have done a little, but they want to do a big lot more. At the present writing I do not know of a real nice soft-water spring within less than six miles of where I now sit; but when I have plenty of time I just enjoy going that distance on my wheel in order to enjoy the fun of drinking cupful after cupful of this delicious life-giving beverage. The spring is in a shady nook

in the woods. It is back perhaps 40 rods from the road, and there is a sufficient volume of water to run a hydraulic ram, and send it clear up to the roadside; but it has never been done. The man, who lives right opposite the spring, has been drawing water with wagon and barrels, day after day and week after week, to put around his plum-trees and blackberries. His crop of plums was sold for several hundred dollars, and, without doubt, paid him well for drawing water in barrels. But an expenditure of about $50.00 would send the water of this spring right up before his door and into his house. There are thousands and thousands of places throughout our land where soft-water springs may be thus utilized. Of course, here and there we find a person who has done it. Our State of Ohio, some years ago, offered a little by way of encouragement, but nobody seems to have taken advantage of it very much.

The watering-troughs by the roadside, kept full and running over by means of a pipe from a spring on a little higher ground, are mostly in the hands of some person who has done it at his own expense, just because he happened to be "built that way." May God grant that more and more people may be built after that fashion!

I know, by talking with other people, that there are others like myself who are hungering and thirsting for pure drinking-water. We have scores of people whose digestion is weak, and whose stomachs seem to be fastidious about water. If it has a woody taste from the wooden pump, or a limy taste from the cistern, or a roofy taste from the wooden roof, it stirs up an unpleasant feeling in the digestive apparatus. Sometimes I have thought it was a notion. Again, I have thought that Nature knew what she wanted, and that the craving was a right and proper one. Many times I have set a crock out in the rain, and enjoyed hugely drinking the pure water right from the clouds, to my heart's content; but nothing else to be found at any of the wells and cisterns in the neighborhood would fill the bill. I told you that the nearest real nice spring I knew of to where I write is six miles away. Is there no other way than to go all this distance for the delicious soft spring water I love so well? Yes, I can have it stored up in clean crocks or jugs, and kept in the cooler. But there are two difficulties here. One is, the water that has been standing is not nearly as good as that fresh from a spring. It may be that it lacks air, and of this I shall speak further on. It is also very apt to become tainted from the cooler. It may be fastidiousness, and notion, you may say. It may be so, and may be not. But the principal attraction that the spring six miles away has, is that a six-mile ride puts me in just the trim to enjoy a drink of spring water. But, wait a little.

Last week, after riding 25 miles it was my great privilege to spend a few hours with one of the Oberlin professors. All round about Oberlin they have hard well water. I tasted the water from the waterworks; but that, too, contained chemicals that I knew would not be safe for me to take. I had been threatened with a fever; and only one who has been there can tell how I longed for some of the pure clear spring water. Now, I have learned by practice to tell by the looks whether the water is hard or soft. Hard water has more or less of a bluish tinge, as seen through a tumbler. Another thing, in hot dry weather it will begin to evaporate around the edges very quickly, and show a faint chalky incrustation. As we sat at the table I noticed a glass of water near me that looked exactly like the spring water I craved. The tumbler was very thin, and the material of it was remarkably clear. I felt so sure that I was right, that, as I took the glass in my hand, I said, "This is filtered rain water, is it not?" My hostess smiled and nodded. It was perfect—just as good as that from my favorite springs. Then we commenced talking about the difficulty of keeping it, even in the cooler. Then she mentioned an experience which has been much like our own. She said that, one day, she wished to keep a pailful, and thought that, if she pressed down the tightly fitting tin cover, it certainly could get no taint from the contents of the refrigerator. A ripe muskmelon was part of said contents. A few hours afterward, on tasting of the contents of the tin pail it was so flavored with muskmelon that it could not be used. On this account it seems best to filter the water only about as fast as you will want it for use.

Ernest and John have each just completed a nice cistern holding about 50 barrels. Their buildings are covered with slate. The water from only half of the roof has heretofore been used. These new cisterns are to be filled from the other half; but after they have been emptied and filled a great many times, in order to remove the limy taste from the water, they are to be filled up each winter some time during a long rain, and when the weather is as near the freezing-point as possible. After that, no summer rains are to be allowed to go into them at all. This fifty barrels of ice-cold water is supposed to be enough to furnish drinking-water through the season, and it is to stay cold and pure; but it is to be filtered as wanted. I believe this is the only safe way. The delicious springs I have told you about are filtered through great coarse sand rocks. If you put coarse building-sandstone near the well in a dry time you will find that you can pour pailful after pailful of water on it; and if you put it on slowly it will soak it all up. It is like a sponge. Well, a trough made of this porous stone would make a very nice filter, but the water would be a long while in getting through it.

I suppose there is no end of filters in the market; but we are just now using one with great satisfaction, illustrated in the cut.

You will notice in the picture a filter-disk. This is made of a certain kind of natural stone. The whole thing is made of the same kind of stone crockery I have mentioned as being such a nice thing for drinking-utensils. You lift off the stone cover, and pour the water in at the top. It drips slowly through the disk. There are several sizes. The smallest size will filter about 4 gallons a day; the largest, about 12 gallons. You may take water that you consider very nice and clear; but place two clear glasses side by side, one filled with filtered water and the other with unfiltered, and you will see a difference very quickly. Again, you may have some water that you consider remarkably pure, and think it is good enough. Brush off the stone surface and wash it clean. Now run through, say, a gallon of your nice pure water. The deposit left upon the surface of the stone will startle you. The pores through the stone, while they are open enough to admit water, are so close that I feel sure they will strain out every particle of vegetable or animal life that so quickly develops and grows in most kinds of water during warm weather. This is one reason why I think the water should be filtered just before it is used. This stone diaphragm is perhaps a little thicker than roofing-slate. It rests in a channel, and is fastened around the edges with cement. If it gets broken or worn out, it can be replaced. It should be cleaned every day; and if the water is very impure, twice a day. By lifting off the top and taking a little brush you can wash the stone in a very few minutes. A common whisk broom answers

very well to wash it. There has been some dispute as to whether such a filter would entirely remove the germs of typhoid fever, cholera, diphtheria, etc. I am not prepared to state *positively* that it will do so; but if the water is first boiled and then filtered, I believe it is *absolutely* safe. One objection to boiling is, that it expels the air and gives the water a

flattish taste. To remedy this, various devices have been brought forward to ærate drinking-water. One of these is a pump for a cistern or a well, that carries as much air down under the water as it brings water up. After having had quite a few jangles and discords in regard to drinking-water for our factory hands, we finally dug a well some little distance away from the buildings. We reached water at about 30 feet, just where we struck the rock. Sections of sewer-pipe, 2 feet across, were then used to curb the sides, cementing each joint with water-lime cement until we came to the top. All the earth taken out of the well was banked around the outside, so as to make a strong slope away from the stone-pipe curbing. This was pounded down so as to prevent, absolutely, any surface water from getting through into the well, even during the very wettest weather and heaviest rains. Then we put in an ærating pump, manufactured by the Van Nett Water-purifier Co., Tiffin, O. Of course, the water is hard; but ever since that pump has been in place I have not heard of a single instance of any one of our hands going to the neighbors for water because they had a notion that it was better than our own. I am quite satisfied that this ærating pump gives the water a peculiar clearness and purity. The claim is, that the quantity of oxygen carried down into the water by the buckets oxydizes or decomposes all organic matter, so as to keep the water pure and wholesome. I don't know whether this is sound logic or not. I give it to you as it came to me. I think this is as nice water for drinking-water as any *hard* water I ever saw or tasted.

It is well known, and has been abundantly proven by experiment, that the water of any well or spring, to be nice, must be constantly running water. If a spring is dammed up so that there is not sufficient force to overflow the obstruction, the water becomes dead and stagnant. Open it out and let it run, and keep the channel clear, and it will soon become clear and pure. It is so with the well. In order to have water nice, you want to keep drawing on the supply constantly. The more water there is drawn out, the better will the water be that is obtained. This illustrates the beautiful text—"Give, and it shall be given unto you." Fix your well so that all your neighbors can take water from it, and you help *yourself* as well as them. A family once had two wells. One was near the house, and the other was off near the barn. Everybody agreed, however, that the water near the barn was so much nicer than that near the house, that they carried all their drinking-water from the barn well, even though it made quite a little more labor. Finally the pump was broken, and they were obliged to use the water from the house well, close by the door, not only for drinking-water for the family, but to water the *horses* also. When the pump was finally fixed, lo and behold! the water at the house well was *good*, and that near the barn *bad*. All that was needed to make one well better than the other was to let *all the horses* drink from it. Don't you see?

In the city, I suppose wells for drinking-water are wisely ruled out; but in the country and country towns they are probably the thing for most of us—that is, because most people do not object to hard water, as I have described; but I would use filters, especially during the hot months when fevers and like maladies prevail. I think, also, that every farmhouse should have its ice-house. It has been proven that blocks of ice, even after freezing, on a pond of *impure* water, are not wholly free from germs of disease. I myself have tasted water cooled from lumps of ice, where the ice was so bad that it would make me sick to drink the water. Freezing is a remedy for certain forms of impurity, but not all. Therefore, if you wish to drink ice water, put the ice in the upper chamber of the filter, and have the water from the ice filtered as well as the other. Of course, it may not be as cold as if the ice were put into the lower receptacle, but I am sure it will be cold enough.

Recent investigations seem to show that the fevers that afflict us are more due to the water we drink than to any other one cause. At our Ohio Experiment Station, two members of a family were sick with malarial fever. Investigation made it quite probable that the fevers were caused by the water from the well. The family moved into another house, simply because of the bad state of the water. With these facts before us, it seems to me there is hardly any other one thing about our homes that so urgently demands the most careful attention as the water we drink. You may say filters and such carefully constructed cisterns as I have described are a good deal of expense and bother. My friend, the typhoid or malarial fever is a *hundred times* more expense and bother; and think what your feelings must be—think of the remorse that would probably follow you through life if a loved one should be taken away—possibly the mother of the family, just because you had been negligent or careless in regard to this one matter—the water we drink. Then, again, please bear in mind that in no way in the world can you show forth Christ's spirit and teaching to better advantage than in providing plenty of good water for the commu-

nity about you. The last day of our county fair, the horses and people drank, probably, a hundred barrels of water from our stone trough in front of the store. There was a brisk wind, and the big windmil did its best all day long in bringing water right from the bottom of the well. But the people took it so fast it made almost a constant stream. The well out in the apiary, that ærates the water, was also kept going pretty nearly to its fullest extent. Neither of the wells, however, gave out.

Now let me close with a little text which it seems to me may be taken in a temporal sense also, as well as spiritual:

And whosoever shall give to drink unto one of these little ones a cup of cold water only, in the name of a disciple, verily I say unto you, he shall in no wise lose his reward.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

SEEDS THAT MAY BE SOWN IN THE MIDDLE OF SEPTEMBER.

In most northern localities it is just about the time you want to sow your seeds for cold-frame cabbage-plants. Go to work just as you would to get cabbage-plants in the spring. When they are of just a nice size to transplant, put them into beds that can be covered with sash. Plant them down much deeper than usual—in fact, clear down to the first leaf, or a little more. Give them room enough so they can make good strong stocky plants, say two inches apart in the row, and the rows three inches from each other. Have the ground rich, then use your sash in such a way as to harden them gradually, but protecting them with sash when the weather is most severe. Onions, spinach, cauliflower, and many other hardy plants and vegetables, may be kept over in cold-frames in just this way; and my opinion is just now, especially after the experience of last spring, that such cold-frame plants are worth more—at least generally speaking—than any plants you can possibly raise in the greenhouse or hot-bed. Now is the time, also, to sow spinach. Get it large enough to use before severe weather comes, if you can. The larger it is without going to seed, the better, and it will frequently winter away into February or March without any protection at all. Of course, much depends upon the quantity of snow on the ground when we have our most severe freezes. A little help from sashes will make your spinach much nicer and safer. Last year we got 10 cts. per lb. for outdoor spinach, and 20 for that raised under glass; the same with winter kale. You want the ground exceedingly rich for all these winter plants. Grand Rapids lettuce should be sown now so as to get nice plants to transplant into the greenhouse or into cold-frames or hot-beds. It is managed very much as we manage cold-frame cabbage-plants, only you want some bottom heat if you want to make it mature in the winter time. The best lettuce we raised last spring was wintered over in a cold-frame without any bottom heat at all. It looked as though the life was frozen out of it along in March; but after the sun had warmed the ground up enough to give it a start, it took hold and grew amazingly. It takes but very little time or ground to grow the seed; and if you should raise more plants than you need, it will not be a very big loss. If, however, you and everybody else happen to be short of plants, as it was last spring, it will be a very big gain, and a nice speculation, to have a lot of nice ones. If you already own the sashes why not make them earn something in the latter part of the winter as well as in the fore part? Ours are now nicely covered up by cases or boxes, and have been so all summer long; but as soon as the first severe frosts come, we expect to have them newly painted and utilized, every one of the 300, by having them covering cabbage-plants, cauliflower-plants, onion-plants, kale-plants, little beets that started to grow before the warm weather was quite gone, etc. Nice vegetables out of season will almost always find a purchaser, especially when it gets to be understood that there is something nice and good to be seen and purchased at your garden every month in the year.

SOMETHING ABOUT LOOSE WAGON-TIRES.

During every dry time, like the season we have just been passing through, for instance, there is always more or less trouble about wagon-tires getting loose; and, with a careless driver, tires have been run off, and expensive breakdowns are the result. Where one watches his tires, however, he will notice quickly when they are getting out of place. The usual method of getting them back again is to get a hammer or a stone, and pound the felly or the tire. If you have tried it, you know it is very unsatisfactory, besides bruising up your wheel. An hour or two ago a man showed me a neat trick. It was this: When your tire gets to slipping off the felly, get a common adjustable wrench—a pretty good-sized one. Open it so while one jaw rests on the edge of the tire the other is against the felly. Now bear down on the handle, or raise up, as the case may be, and one jaw will crowd the tire forward while the other pushes the felly back under it. In a few minutes you can get all of the tires exactly over the felly, where they should be. Now wet your wheel, and the tires will stay in place until the wood becomes very dry again. A few years ago I was greatly taken up with the idea of soaking the wood with linseed oil—boiling hot. I bought the machine, and carefully went over every wheeled vehicle on the premises. Perhaps it did some good; but my opinion is, that, had I expended the same amount of money by sending the wheels to a skillful wagon-maker, I should have been better off. Later yet, somebody talked about putting a washer of leather between the end of the spoke and the felly. I spent some more money in having a man go over the wheels in this way; but my decision is as above, "Every man to his trade." A good wagon-maker or wagon-repairer who has carefully watched all of these things for years, and made it his study to see how he can do his customers the most good for the smallest amount of money, would be cheaper in the end than the plans I have mentioned. If, however, you have leisure time at odd spells, or during bad weather, it may make a difference. Whenever I wish to do such work I have to hire a man at $1.25 or $1.50 a day, and we usually have plenty of indoor work for all of our help during bad weather. Whatever you do, don't let your wheels go without having the tires properly set, being properly painted as often as they need it, etc. A stitch in time certainly saves nine in the care of wheels of vehicles.

ONLY 44 CENTS FOR WHEAT, AFTER HAULING IT 17 MILES.

Friend Root:—Find inclosed one dollar at last. They are hard to get now, with wheat at 44 cts. a bushel, and 17 miles to haul it. A tremendous drouth has cut all other crops short, honey included; but I don't see how I can get along without GLEANINGS. I have read it for 16 years, and should be lost without it. Give

us lots of high-pressure gardening, Home talks, and other things of a like nature.

I can make a reservoir to hold 60,000 barrels. How much ground will that irrigate? How large an outlet will it take to let the water on the ground?

My six-year-old bee-man wants to know if that roaring in the apiary is bees snoring in their sleep. J. T. SHUMARD.

Golden, Mo., Sept. 4.

[Friend S., 44 cts. for wheat is rather lower than any price I have heard of yet. Now, if other crops are cut off, wheat is certainly going to be in better demand before long; and if it can possibly be kept, I would not be in a hurry to sell it. Thanks for your kind words.

During a season like the present, I have estimated that it needs a reservoir of about 2000 barrels for a quarter of an acre—that is, where we depend upon a windmill; and if your purpose is to store rain water when it comes, you should have perhaps even more than that. According to the above, your reservoir would be sufficient for only about 15 acres; but, of course, all these figures must be very indefinite with the various circumstances that will affect each case. I should say the outlet would need to be a pipe from one to two inches in diameter; but here, again, much depends upon the head of water, the porosity of the soil, the slope of the land, etc. If you are going to run your water in ditches through your ground, you must let on water enough to go from one end of the ditch to the other. If your stream is too small it will all soak into the ground before it gets from one end of the lot to the other.

Your six-year-old bee-man is not so very far out of the way, perhaps; but I would suggest to him that, instead of snoring in their sleep, they are simply purring like kittens, because they are happy. After the bees have brought in a great lot of honey during the day you will hear this contented roar at the entrance of the hives. It has been suggested that roaring is caused by the effort they make to evaporate the surplus moisture in the new honey. My opinion is, however, that, inasmuch as bees express themselves by the humming of their wings, this peculiar sound you speak of is also a note of contentment, as I said before; and who can say that it is not a way they have to express thanksgiving and praise to the great Father above, who gave them life and being? Very likely they have no conception of God; but I think that they, in common with other animals, have a way of expressing gratitude and thanksgiving, nevertheless.] A. I. R.

MUSHROOM SPAWN THAT WILL NOT GROW.

On page 536 we published a letter complaining of our mushroom spawn, and also acknowledged that it came from Johnson & Stokes. Again, on page 611 E. C. Green, of our Ohio Experiment Station, says Johnson & Stokes are not alone in the matter, etc. Well, just now here comes a later report from friend Bartow, as follows:

Mr. Root:—I take it all back. Some of the mushrooms have grown. The first I gathered to-day were planted as soon as I gathered them.

Milan, O., Aug. 30. ALLEN BARTOW.

Friend B., I am exceedingly obliged to you for letting us know so promptly that the fault is not entirely in the spawn, after all. I have seen this same thing so many times that I begin to suspect that, after one has given up that the plant will grow, it is pretty sure to come up after all, providing temperature, moisture, and other conditions happen to be just to its notion. Our own has not started yet, but I am watching every day to see it do so.

"LEE'S FAVORITE" POTATOES.

I have for the last 20 years experimented more or less with potatoes, and in that time I have tried all the new and popular varieties as they came along, and I must say that, in all my experience, I have never had a variety that could come up to Lee's Favorite. This season I planted Lee's Favorite, New Queen, Early Sunrise, Crown Jewel, Charles Downing, and a few more varieties, and I shall abandon all, and stick to Lee's Favorite, New Queen, and the good old Early Rose. With these three sorts, planting one or two eyes in a place, in drills 15 inches apart in the drill, level culture, and, in dry weather, by keeping the cultivator running, I can raise lots of beautiful potatoes on a small area of ground. The Rural New-Yorker is the worst potato to rot, with me, of any I have tried. Lee's Favorite is the least subject to rot of all I have tried; in fact, I do not remember of ever seeing a rotten one of this variety. N. F. BOOMHOWER.

Gallupville, N. Y., Aug. 21.

CONVENTION NOTICES.

The Susquehanna Co. Bee-keepers' Association will meet at Jay's Hotel, in New Milford, on Thursday, Oct. 12, at 10 A.M. All are cordially invited. H. M. SEELEY, Harford, Pa.

THE COLUMBIAN MEETING OF THE BEE-KEEPERS OF NORTH AMERICA.

The North American Bee-keepers' Association will hold its 24th annual convention on the 11th, 12th, and 13th of October, 1893, in Chicago, Ill.

PLACE OF MEETING.—A hall for the use of the convention has been secured in the "Louisiana Hotel," at the corner of 71st Street and Seipp Avenue, only a few minutes' walk from the south entrance to the World's Columbian Exposition. This hall is large, well lighted, and in a quiet place.

HOTEL ACCOMMODATIONS.—The Louisiana Hotel itself will furnish comfortable accommodations to a large number of the members, at very moderate prices. For a small room two persons pay daily 75 cts. each. Larger rooms occupied by two at $1.00 per person. Four persons occupying a room having two beds will pay 50 cts. each. Meals can be obtained in the hotel at reasonable rates, or at numerous restaurants in the vicinity. It is best to engage rooms by letter beforehand. The proprietors of the Louisiana Hotel give us the use of the hall free, expecting that many of the members will take rooms with them; and as the prices are moderate, and the rooms are neat and convenient, it is but just for all who can well arrange to stop there to do so. For this purpose, address "Manager of Louisiana Hotel, corner 71st Street and Seipp Ave., Chicago," stating what priced room is wanted.

RAILWAY TICKETS AND BAGGAGE.—Most of the railways ticket to the Exposition Depot, near which the Louisiana Hotel is located; and baggage should be checked to that station, thus avoiding extra charges, as it is about seven miles from the city stations to the World's Fair grounds. Information as to rates of travel, time tickets are good, etc., can be obtained of all local ticket agents. From many points—especially from cities having numerous competing lines—excursions will be starting which will permit those who can take advantage of them to go and return at the usual rate for one fare.

PROGRAMME AND ATTENDANCE.—The programme, of which further notice will be given, consists of interesting papers by well-known specialists, and discussions of topics which will interest honey-producers, queen-breeeders, manufacturers of apiarian supplies, publishers and editors of bee literature, and dealers in honey and wax. Viewing the various foreign and home exhibits in apiculture at the World's Fair will form an attractive and instructive feature of the meeting, and the number of apiarists widely known here and abroad who will be present and take part in the proceedings is of itself a guarantee that this will be a highly interesting and enthusiastic meeting. Counting, therefore, upon a large attendance, the Executive Committee of the society has made arrangements accordingly. Let every State in the Union send the strongest possible delegation, and let every branch of our industry be represented at this great Columbian gathering. No other occasion is likely to occur in our generation when so much of interest can be seen and heard at the time of one of these meetings; and it is earnestly hoped that a much larger number of the bee-keepers of North America than has ever met at any previous convention will be able to avail themselves of this grand opportunity. A special invitation is extended to the bee-keepers of every foreign country.

NOTICE OF ATTENDANCE OR OF PRESENTATION OF PAPERS.—The Secretary is desirous of obtaining, as early as possible, the names of all who contemplate being present. Kindly notify him by card or letter, also any who may wish to present papers the titles of which have not yet been handed in, are requested to send to the Secretary at as early a date as possible the exact title and a very brief abstract of the article, which will enable him to assign the topic its proper place in the programme.

FRANK BENTON,
Secretary North American Bee-keepers' Association,
U. S. Department of Agriculture, Washington, D. C.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
36 PAGES 7×10
$1.00 PER YEAR

The woman saith unto him, Sir, thou hast nothing to draw with, and the well is deep: from whence then hast thou that living water? Art thou greater than our father Jacob, which gave us the well, and drank thereof himself, and his children, and his cattle?—JOHN 4:11, 12.

THE second number of the new series of the *Canadian Bee Journal* shows further evidence of improvement.

LAST week we sent a consignment of 40 queens by mail to Australia. Of the 50 we sent some months ago in a previous consignment, only three or four have been reported dead; the rest we have not heard from as yet.

WE regret to learn, through the *Illustrated Home Journal*, that C. P. Dadant, the foundation-maker, has been down for several weeks with the typhoid fever; but as he is now convalescent we hope he will soon be himself again.

So far the indications show that there will be a very light crop of fall honey. A very little yield is reported from buckwheat. The honey on the market will be almost entirely of the light order, made up of California honey; and in the East, clover.

N. F. BOOMHOWER, an extensive and practical apiarist, gives in another column, quite incidentally, some facts that strongly support our position that swarms unaccompanied with queens do not unite, and that those with queens do quite the contrary, or did do so in the instances he records.

THE *Australian Bee Bulletin* is a monthly bee-journal that has been coming to our desk for a few months back. Up till recently the Australian bee-journals have had a rather hard pull to maintain an existence; but the above seems to be going on with flying colors, and gives every evidence of long life.

THERE, we are all at sea again. Hasty, in the leading article in this issue, has given a batch of statistics that leaves us without any rule. But say, friend H., *if* we succeed in cutting out all queen-cells in five days, and again in five days more, as explained in Dr. Miller's Straw, won't that stop second swarms? Or is it a fact that second swarms *may* come out, cells or no cells?

IN our last issue the Reports *Dis*couraging rather overbalanced the Reports *En*couraging. In this issue we have *no* Reports Encouraging, but quite a batch of the other kind. Yes, indeed, there will be a good demand for all the crop of white-clover honey, and prices ought to be good. As soon as fresh fruit is off the market, the demand for honey will begin to increase.

IN our last issue, on page 687, an omission occurs in the fifth line from the bottom of the last column that almost destroys the full force of the editorial. The sentence should read: "We stowed these [the combs] away until *after* the honey-flow, when they were put in tiers of four or five hives." The important thing omitted is the word "after." It is easy enough to stop robbing *during* the honey-flow; but the point we wanted to make was, that we could stop it *after* the honey-flow.

WE have never taken very much stock in drug remedies for curing foul brood; and after having made several experiments with them we are less in favor of them than we were at first; but naphthaline is suggested in the *British Bee Journal* as being a very efficient remedy; and we suggest to R. L. Taylor, the experimenter at the Michigan Agricultural Station, the wisdom of testing this remedy. Mr. Taylor has had considerable experience in handling foul brood, and it would be far cheaper for him to test it than for several bee-keepers to trouble with it, with the possibility of its failing to cure.

ONE of our correspondents, Mr. S. B. Kimmell, of Diamante, Cal., writes:

The estimate for Southern California is about 500 tons; but prices for extracted honey are quite low —4 cts per pound is all that is offered, and buyers are scarce on account of the money crisis at this time. But honey can be raised with a profit at this price here in any fairly good season.

Samples of California honey, so far as we have tested them (and samples have been sent us from scores of bee-keepers), show that the crop is unusually fine—light in color, and very heavy in body, and the flavor unusually pleasant.

WE notice in the *Illustrated Home Journal*, of which Thomas G. Newman, formerly editor of the *American Bee Journal*, is editor, a department entitled "Apicultural." It is a pleasure to read again bee editorials from the "Old Roman;" we are very glad indeed to hear of his improved health. In answer to some inquiry as to why he did not have an exhibit at the World's Fair, Mr. Newman says:

Early in the season for preparation, Bro. Root wrote, asking if I would make an exhibit, and suggesting that we had some one in common to look after both. I had then another attack of la grippe which left me without ambition enough to undertake it, and I replied that I hoped to be in heaven long before the fair materialized, and should not attempt to make a display. But since then my health has improved and I am still here to see the Fair and be seen, and now hope to put in an appearance at the National Convention next month.

MAY we suggest to those who have papers or essays to be read at the convention, to bring or send extra copies for the use of the bee-journals and the reporters of the regular newspapers? At almost every convention we have attended, there has been more or less confusion or bother because there has been only one copy of a paper. A reporter of one of the daily papers would borrow it to make a brief résumé of it. It may get lost; and if returned, and several bee-journal editors want a copy of it, there is apt to be no little trouble in "getting it all around." Indeed, when the report of the last Washington convention was made, single copies of the different papers that were read at the convention were scattered among the different bee-journal editors; and it was no little trouble for the reporter, Mr. Hutchinson, to get them all together so that they could be put into the official report. We hope the essayists will bear this in mind. If you do not care to go to the trouble of making extra copies, get some member of your family to do it for you. If you use a typewriter, extra copies can be made as easily and conveniently as one. Now, all of this is said in the interest of accurate and careful reports.

GIVING UP A GOOD THING TOO HASTILY.

WE have all seen instances of the folly of testing *every* new thing as soon as it is barely mentioned. On the other hand, we have seen the folly of *rejecting* many of these new things before they were fairly tested. We at first rejected the Boardman solar wax-extractor at

our apiary; but we have since learned that the first extractor was not properly tested. We now find the machine to be a most magnificent success, and it actually earns more *dollars* than any thing else we have put in the apiary for a long while. There was a time when fixed frames, or, more correctly speaking, self-spacing frames, were regarded as nuisances, and impracticable, and all this because they were not candidly and carefully tested; but now the whole bee-keeping world is adopting them right and left, in some form or other; and the evidence seems to show that they have come to stay. Now, is there not any danger that a few of us may decide against the self-hivers and the Langdon non-swarmers before they have been fairly tested. *We* are satisfied that the Pratt hiver is a success. At first we were not favorably impressed with any form of hiver; and some preliminary tests that we have made, as well as some reports that come in, led us to believe they never would be practicable; but more careful tests convinced us to the contrary. In this issue we give the report of one who has tested the Langdon non-swarmer, and found it to be fairly successful. Let us not throw aside something hastily, that may prove to be of great value. There is no use in scoring the editors of bee-journals because they give prominence to something that may prove to be a failure. Let the watchword be, "Prove all things and hold fast that which is good." But in order to do the proving we must give the bee-keeping world a chance to "prove."

THE AMERICAN COFFEE-BERRY.

After publishing what we did on page 639, we are told that the American coffee-berry is advertised by Samuel Wilson, of Mechanicsburg, Pa. It was also my pleasure a few days ago to see it growing on the grounds of our experiment station at Wooster, O. If you will turn back to page 639 you will notice that the *Rural New-Yorker* says: "The 'American' part of it is the cheek of the 'introducer' who calls it a new thing, and wants to charge ten times what it is worth." In Wilson's catalogue it is called "Cole's Domestic coffee-berry." An exaggerated picture is given, and a tremendous puff, with several testimonials from those who have used the coffee. Then follows the offer of 25 cts. a packet, or five packets for a dollar. It is true, the plant is exceedingly prolific, for it is one of the soy-bean family, and the seeds could be sold for five cents a packet, and good-sized packets at that. I have tested the coffee, but I should say it could not be compared with even the poorest grades of coffee. It might, however, prove more healthful and nutritious; for, while beans are a most nutritious food, they are in no sense a stimulant. I do not know that anybody would be very much harmed by investing, only that it seems too bad, when money is so hard to get hold of, to be asked to pay 25 cts. for a small package of beans; and, by the way, I do not think I ever saw any thing in the whole range of the bean family, where there are so many pods on a single plant. As the beans are small, however, we probably shall not get so many bushels per acre, after all.

Just a word right here in regard to exaggerated pictures and exaggerated recommendations in our seed catalogues. We should hardly want to call the seedsman a humbug or swindler; but if he persists in thus booming every thing he catalogues, his customers will most surely begin to calculate each spring, as the seed catalogue comes out, that it will not be safe to believe more than a small part of what the pictures and description claim. A. I. R.

PERFORATED ZINC; IS IT POSSIBLE TO MAKE A ZINC THAT WILL EXCLUDE ALL QUEENS, INCLUDING VIRGINS, AND YET ALLOW THE WORKERS TO PASS FREELY WHEN LOADED?

When perforated zinc was first introduced into this country, it had perforations very nearly $\frac{18}{100}$ of an inch wide; but it was soon discovered by us and others that queens would go through it; and, not being able to buy zinc with perforations $\frac{175}{1000}$ wide, we constructed an automatic machine for punching the metal in large quantities; but ere long, when this zinc was introduced among bee-keepers, it was discovered that queens would occasionally get through this. About this time, Dr. G. L. Tinker, of New Philadelphia, O., made perforated zinc $\frac{17}{100}$ wide. From numerous experiments he had made, he concluded that this size was correct; that it did not hinder loaded workers in passing through it, but always excluded queens. This size was generally accepted as correct. We then made an entirely new machine, and a new set of dies that made zinc $\frac{17}{100}$ inch wide; but by a slight miscalculation the dies were a trifle larger than $\frac{17}{100}$, and again queens were reported as going through. Two years ago we made zinc a trifle scant $\frac{17}{100}$, thinking that this time we should make a sure thing of it; but in the course of time, reports would come in that virgins and sometimes laying queens would go through this very zinc; and Dr. Miller himself wrote us that he had almost despaired of getting a perforated metal that would absolutely exclude the queens. We said nothing about it in print, but concluded that our dies must have worn since they were first made, because we have turned out the metal during the past few years by the ton. We were about to set our machinist to making new dies, when it occurred to us to make some careful measurements. One of our men has a micrometer that will record the one thousandth part of an inch. We first measured Dr. Tinker's zinc, and found this to show exactly $\frac{171}{1000}$ as its width. The Chicago zinc showed a measurement of $\frac{161}{1000}$. As we heard good reports from Dr. Tinker's, we naturally concluded that our zinc was something over $\frac{170}{1000}$, or, at least, larger than Dr. Tinker's. To our great surprise, we found that the holes measured only $\frac{165}{1000}$. Three of the holes showed nearly $\frac{170}{1000}$; but all of the rest of the holes in that die of 64 holes showed a measurement of $\frac{165}{1000}$ and under, though none recorded less than $\frac{164}{1000}$. We concluded that Dr. Miller and others who reported queens going through our zinc, must, by some mistake, have gotten some of our old zinc. We accordingly wrote to Dr. M., asking him to send us some of the zinc from the honey-board through which the queens went. As Dr. Miller's hives are all numbered, and records are kept in a note-book by number, he had no difficulty in going to the identical honey-board through which, he knew positively, his queens had gone. He forwarded us the zinc, and, by actual measurements, we found it to be —what do you think? Exactly $\frac{169}{1000}$! Now, by some very careful and elaborate experiments that we made in our apiary we have found that zinc as small as the Chicago, having perforations only $\frac{161}{1000}$, hinders greatly the workers, *when loaded*, from going through. Indeed, there were large numbers of the bees that could not pass through at all. We then and there concluded that such zinc would never do for the passage of loaded bees. Well, now, zinc as small as $\frac{165}{1000}$ is as small as we dare go; so we must naturally conclude that there is, perhaps, one queen in a hundred that may be able to get through zinc $\frac{165}{1000}$ inch wide at the narrowest way of the perforation. Obviously, it would be folly to try to reduce the size any more than

this. If there is a larger percentage than one queen in a hundred that will go through a zinc of this size, we should like to have our readers furnish us the facts. But so far, as a general rule, the exceptions are so rare that the $\frac{165}{1000}$ width works in a perfectly satisfactory way. Now, is it not possible that queens reared from large larvæ would be smaller than queens reared from smaller larvæ? and may not this one in a hundred be accounted for by the fact that they were partially developed as *a bee* before the bees decided they were to be *queens?*

Now, this matter of excluding queens is an interesting and important one, and we suggest that R. L. Taylor procure zinc of various sizes, and try various races of queens, and various queens of the same race—not forgetting, also, to try queens from the same mother, some queens reared from large larvæ, and some from small. Manufacturers can easily produce any size of perforation that will always exclude. It is exceedingly annoying to have queens go through the zinc; and if there is a possible way of making a sure thing of it, and yet not hinder the workers from passing through it, we want to know it. It is barely possible that Dr. Miller's bees, even when loaded, would go through zinc $\frac{160}{1000}$ inch wide; and, on the other hand, we know almost positively that certain Carniolans could not get through it; and also some Italians that we have had—indeed, we think all of them. Let us hear from the brethren who have tried our latest zinc.

WE clip the following from the *Farm and Fireside:*

WHAT THE RELIGION OF JESUS DOES.

It gives a peace that the world can not take away.

It makes men pay debts that the law can not collect.

It makes women stop talking scandal.

It makes children obey their parents.

It makes men do good with their money.

It makes those who have been vicious strive continually to control themselves.

It makes the drunkard stop buying beefsteak for the saloon-keeper, and go to providing for his own family.

It throws the jailer out of employment and raises the workman's wages.

It builds hospitals and asylums, and furnishes the money to run them.

It makes men unselfish and women more lovable.

It throws a bright light into the valley of death, and shows that there is a city of eternal beauty just beyond it.

SPECIAL NOTICES.

GRAND RAPIDS LETTUCE SEED.

New crop right from Eugene Davis, the originator. Oz., 20c; pound, $1.75.

EXTRA EARLY AMERICAN PEARL ONION-SETS.

Now is the time to put these out. We have a good supply at the prices given in our issue for Sept. 1.

We have made arrangements with the publishers of that magnificent magazine, the *Cosmopolitan*, whereby we can club that journal and GLEANINGS for two years for $2.00 a year. Up till very recently the *Cosmopolitan* was $3.00 a year. Send in your subscriptions at once. Old or new subscribers may take advantage of this offer.

RADISH SEED FOR SEPTEMBER SOWING.

Wood's Early Frame or Chinese Rose Winter, will, with ordinary fall weather, make nice radishes in the open air if sown at once. If you wish to prolong the crop, put them in beds so you can put on sash about the time severe freezing sets in. We can furnish a nice strain of either at 10 cts. per oz.; 75 cts. per lb. If wanted by mail, add the usual 9 cts. per lb. for postage and packing.

"WORLD'S FAIR" EXHIBIT.

Those of our readers, and others who may be attending the World's Fair during the coming six weeks, will find our exhibit in section 33, H, in the gallery of the Agricultural Building, near the honey exhibits of the various States and countries represented. Surmounting the exhibit is a fine water-color drawing, 25x40 inches, giving a very good idea of how we appear at the Home of the Honey-bees. In the glass case will be found a line of the goods we manufacture.

HONEY MARKET.

We have no change to report in the situation on honey, except that, in many localities, the amount secured does not seem to hold out to what was first expected. Prices are no better, and demand fair.

We quote choice extracted clover or basswood honey, in 60-lb. cans, at 9c per lb.; by the case of 2 cans; 8½c; two cases or more, 8c.

Choice white comb honey in 1-lb. sections, 24-lb. cases, 17c per lb.; in lots of 100 lbs. or more, 16c. In four-case lots or more we crate it so will ship safely by freight without having the combs broken down.

THE STONEWARE WATER-FILTER.

In order to save correspondence it may be well to say here that the price of the stoneware water-filter, figured on page 719, is, for the four sizes manufactured, respectively, $2.00, $3.75, $5.00, and $6.25. Address the Zanesville Stoneware Co., Zanesville, Ohio. Or if you are ordering goods of us, or if for any other reason you prefer to send here, you can do so. While we do not, as a rule, intend to advertise goods in our reading-columns, yet where any thing is so manifestly beneficial to the health of community we are pleased to give the manufacturers a lift by mentioning things which, in our judgment, merit a free advertisement.

REDUCTION IN THE PRICE OF EGYPTIAN OR WINTER ONION-SETS.

Until further notice the price will be 10 cts. per quart; 50 cts. per peck; $1.75 per bushel. If wanted by mail, add 10 cts. per quart extra for postage. These can be planted any time this month or next; but the sooner the better. They will grow whether it rains or not. In fact, the Egyptian or winter onion is the most hardy and vigorous plant to take right hold and grow, under all circumstances and conditions, of any plant I ever saw, of any sort. After you once get them in the ground they will be there for evermore unless you plow or dig them up. You may cut off the tops, or let them grow up to weeds or any thing else you choose. They will keep on growing, splitting up and multiplying, and filling the ground; but, of course, they will make ever so much nicer bunch onions if you give them deep rich soil and lots of manure.

HONEY-PACKAGES FOR SHIPPING AND RETAILING.

On the second and third cover pages of this issue we print a couple of pages from our catalogue, of seasonable goods, to which we call your attention. The No. 25 jar is one of our leaders in glass packages for retailing, and it deserves to be. It is made of clear flint glass, and holds a pound without crowding; has a glass cover with rubber ring; and the screw rim, instead of being tin as we have heretofore represented it, we find to be nickel-plated on brass, or some metal that will not rust. This adds a decided advantage to this jar. The jam-jar screw-top pails and tumblers are all quite popular, and are not expensive, especially the latter. We have a good stock on hand to ship promptly.

There is nothing equal to the 60-lb. cans for shipping extracted honey. Many use kegs and barrels because the first cost is some less than cans. Our experience has been, that, after paying for the loss from leakage, they cost more than cans. Two cases of leakage have come to our notice the past week. One shipment of two barrels went a distance of two or three hundred miles without transfer, and a week on the way. When the barrels were delivered there was 152 pounds of choice honey gone from one barrel In the other case the shipment did not go much farther; and in one barrel of 500 pounds, only 15 pounds was left. We know another man whose honey was leaking so badly during this very dry weather we have been having that he was compelled to get cans and empty the barrels into them.

These may be exceptional cases; but they go to prove what we have been trying to teach for the past five years or more, and what we have found true in our own experience that cans are by far the most satisfactory package to ship honey in, and the cheapest in the long run.

SPECIAL PREMIUM FOR OCTOBER.

During the next three months very many subscriptions expire, and have to be renewed. In order to avoid sending you notice of the expiration of your subscription, and to induce you to have the date on the wrapper of your paper advanced one year, we have decided to offer special premiums. These will be offered for only a limited time; and, if taken advantage of at all, must be accepted within the specified time. Our first offer we will not agree to hold open beyond the month of October. To every present subscriber who is not already in arrears, and who will send his renewal, with $1.00 before his subscription expires, and before Nov. 1, 1893, we will send free postpaid one of those wonderful

AUGITE STOVE-MATS.

We first offered this article for sale in November, of last year; and since that time we have disposed of about 150 gross, or over 20,000. Very many of our readers are already supplied, and appreciate the blessing they have been to them. They are, in fact, a household necessity. Probably many of those first sent out now need replacing with new ones, or perhaps an extra one would not come amiss during the fruit-canning season, especially when it will cost you nothing. Certainly you could make no worse use of it than to present it to a neighbor who has not yet learned of its value. If your subscription is in arrears we will require that you pay all arrears and a year in advance in order to secure this premium. If you secure a new subscription to send along with yours you may offer such person GLEANINGS till the end of 1894 from the time you take the subscription for $1.00, and we will give you another stove-mat for securing the name and sending it along with yours, together with $2.00 to cover both subscriptions.

LADIES' TOILET-CASE.

This is something that many ladies will find invaluable. It contains 238 useful articles as follows: 100 sewing-needles (4 papers); 1 highly polished steel bodkin; 2 double long yarn-darners; 2 medium long yarn-darners; 2 fine long yarn-darners; 2 double long cotton-darners; 2 fine cotton-darners; 2 wool-darners; 2 short yarn-darners; 2 looping needles; 2 crewell needles; 2 straw or milliners' needles; 2 glovers' needles; 2 button needles; 1 chenille or lace needle; 1 tapestry or rug needle; 2 bonnet-pins; 2 hat-pins; 2 shawl-pins; 2 cloak-pins; 6 toilet-pins; 96 white pins; 1 crochet-needle.

These, if bought separately in stores, would cost from one to two dollars. The price printed on this case is 35 cents. We will send one postpaid for 30 cents; 4 for $1.00, or 10 for $2.00; or to any one who will send us a new subscription to GLEANINGS, and $1.00, we will present free postpaid one of these valuable cases.

Black and Hybrid Queens For Sale.

For the benefit of friends who have black or hybrid queens which they wish to dispose of, we will insert notices as below, first insertion free of charge. After the first, 10c per line. We do this because there is hardly value enough in these queens to pay for buying them up and keeping them in stock; and yet it is oftentimes quite an accommdation to those who can not afford higher priced ones.

I have fine hybrid queens by return mail, for 25 cts. each. W. A. SANDERS, Oak Bower, Hart Co., Ga.

About 1 dozen fine young mismated queens at 35c. P. J. THOMAS, Fredonia, Kans.

I have a number of mismated Italian queens, all young and of this year's rearing—mostly all producing from 2 to 3 bands, good and prolific, that I will take 40c each for, or 3 for $1.15. Speak quick. M. H. DEWITT, Sang Run, Md.

Warranted Golden Queens,

80c; 6 for $4.25; dozen, $8.00; young tested, $1.60 up. Write for prices on select and breeders.
J. B. CASE, Port Orange, Vol. Co., Fla.

Books for Bee-Keepers and others.

Any of these books on which postage is not given will be forwarded by mail, postpaid, on receipt of price.

In buying books, as every thing else, we are liable to disappointment if we make a purchase without seeing the article. Admitting that the bookseller could read all the books he offers, as he has them for sale, it were hardly to be expected he would be the one to mention all the faults, as well as good things about a book. I very much desire that those who favor me with their patronage shall not be disappointed, and therefore I am going to try to prevent it by mentioning all the faults, so far as I can, that the purchaser may know what he is getting. In the following list, books that I approve I have marked with a *; those I especially approve, **; those that are not up to times, †; books that contain but little matter for the price, large type, and much space between the lines, ‡; foreign, §. The bee-books are all good

BIBLES, HYMN-BOOKS, AND OTHER GOOD BOOKS.

As many of the bee-books are sent with other goods by freight or express, incurring no postage, we give prices separately. You will notice, that you can judge of the size of the books very well by the amount required for postage on each.

8	Bible, *good print*, neatly bound	20
10	Bunyan's Pilgrim's Progress**	30
20	Illustrated Pilgrim's Progress**	75

This is a large book of 425 pages and 175 illustrations, and would usually be called a $2.00 book. A splendid book to present to children. Sold in gilt edge for 25c more.

6 | First Steps for Little Feet. By the author of the Story of the Bible. A better book for young children can not be found in the whole round of literature, and at the same time there can hardly be found a more attractive book. Beautifully bound, and fully illustrated. Price 50 c. Two copies will be sold for 75 cents. Postage six cents each.

5	Harmony of the Gospels	35
3	John Ploughman's Talks and Pictures, by Rev. C. H. Spurgeon*	10
1	Gospel Hymns, consolidated Nos. 1, 2, 3, and 4, words only, cloth, 10 c; paper	05
2	Same, board covers	20
5	Same, words and music, small type, board covers	45
10	Same, words and music, board covers	75
3	New Testament in pretty flexible covers	05
5	New Testament, new version, paper covers	10
5	Robinson Crusoe, paper cover	10
4	Stepping Heavenward**	18
15	Story of the Bible**	1 00

A large book of 700 pages, and 274 illustrations. Will be read by almost every child.

5	The Christian's Secret of a Happy Life**	25
8	Same in cloth binding	50
	"The Life of Trust," by Geo. Muller**	1 25
1	Ten Nights in a Bar-Room, T. S. Arthur*	05
5	Tobacco Manual**	45

This is a nice book that will be sure to be read, if left around where the boys get hold of it, and any boy that reads it will be pretty safe from the tobacco habit.

BOOKS ESPECIALLY FOR BEE-KEEPERS.

Postage		Price without postage.
15	A B C of Bee Culture. Cloth	1 10
5	A Year Among the Bees, by C. C. Miller	45
	Advanced Bee Culture, by W. Z. Hutchinson	50
3	Amateur Bee-keeper, by J. W. Rouse	22
14	Bees and Bee-keeping, by Frank Cheshire, England, Vol. I.§	2 36
21	Same, Vol. II.§ ....r	2 79
	or, $5.25 for the two, postpaid.	
	Bees and Honey, by T. G. Newman	1 00
10	Cook's New Manual. Cloth	90
5	Doolittle on Queen-Rearing	95
2	Dzierzon Theory	10
1	Foul Brood; Its Management and Cure; D. A. Jones	09
1	Honey as Food and Medicine	05
10	Langstroth on the Hive and Honey-Bee‡	1 25
15	Langstroth Revised by Ch. Dadant & Son	1 25
10	Quinby's New Bee-Keeping	1 40
	Thirty Years Among the Bees, by H. Alley	50
4	Success in Bee Culture, by James Heddon	46
	Handling Bees, by Langstroth. Revised by Dadant	08
	Bee-keeping for Profit, by Dr. G. L. Tinker	25
5	The Honey Bee, by Thos. William Cowan	95
	British Bee-Keeper's Guide Book, by Thos. William Cowan, England§	40
3	Merrybanks and His Neighbor, by A. I. Root	15
4	Winter Problem in Bee-keeping, by Pierce	46

MISCELLANEOUS HAND-BOOKS.

3 | A B C of Potato Culture, Terry** 35
This is T. B. Terry's first and most masterly work. The book has had an enormous sale, and has been reprinted in foreign languages. When we are thoroughly conversant with friend Terry's system of raising potatoes, we shall be ready to handle almost any farm crop successfully. It has 48 pages and 22 illustrations.

5 | A B C of Carp Culture, by Geo. Finley 35
5 | A B C of Strawberry Culture, by T. B. Terry and A. I. Root, 144 pages; 32 illustrations 35
5 | An Egg-Farm, Stoddard** 45
| Amateur Photographer's Hand-book** 70
| Barn Plans and Out-Buildings* 1 50
| Canary Birds, Paper, ... 50
| Draining for Profit and Health, Warring .. 1 50
10 | Fuller's Grape Culturist** 1 40
| Farming For Boys* 75
This is one of Joseph Harris' happiest productions, and it seems to me that it ought to make farm-life fascinating to any boy who has any sort of taste for gardening.

7 | Farm, Gardening, and Seed-Growing** 90
This is by Francis Brill, the veteran seed-grower, and is the only book on gardening that I am aware of that tells how market-gardeners and seed-growers raise and harvest their own seeds. It has 166 pages.

12 | Gardening for Pleasure, Henderson* 1 85
While "Gardening for Profit" is written with a view of making gardening PAY, it touches a good deal on the pleasure part; and "Gardening for Pleasure" takes up this matter of beautifying your homes and improving your grounds without the special point in view of making money out of it. I think most of you will need this if you get "Gardening for Profit." This work has 404 pages and 203 illustrations.

12 | Gardening for Profit, new edition** 1 85
This is a late revision of Peter Henderson's celebrated work. Nothing that has ever before been put in print has done so much toward making market-gardening a science and a fascinating industry. Peter Henderson stands at the head, without question, although we have many other books on these rural employments. If you can get but one book, let it be the above. It has 376 pages and 138 cuts.

| Gardening for Young and Old, Harris** 1 25
This is Joseph Harris' best and happiest effort. Although it goes over the same ground occupied by Peter Henderson, it particularly emphasizes thorough cultivation of the soil in preparing your ground; and this matter of adopting it to young people as well as old is brought out in a most happy vein. If your children have any sort of fancy for gardening it will pay you to make them a present of this book. It has 187 pages and 46 engravings.

10 | Garden and Farm Topics, Henderson** 75
| Gray's School and Field Book of Botany ... 1 80
5 | Gregory on Cabbages; paper* 25
5 | Gregory on Squashes; paper* 25
5 | Gregory on Onions; paper* 25
The above three books, by our friend Gregory, are all valuable. The book on squashes especially is good reading for almost anybody, whether they raise squashes or not. It strikes at the very foundation of success in almost any kind of business.

15 | How to Make the Garden Pay.** 1 35
By T. Greiner. This is a new book, just out, and it gives the most explicit and full directions for gardening under glass of any book in the world. Those who are interested in hot-beds, cold-frames, cold-greenhouses, hot-houses or glass structures of any kind for the growth of plants, can not afford to be without the book.

| Handbook for Lumbermen 10
10 | Household Conveniences 1 40
2 | How to Propagate and Grow Fruit, Green* 15
2 | Injurious Insects, Cook 25
10 | Irrigation for the Farm, Garden, and Orchard, Stewart* 1 40
This book, so far as I am informed, is almost the only work on this matter that is attracting so much interest, especially recently. Using water from springs, brooks, or windmills, to take the place of rain, during our great droughts, is the great problem before us at the present day. The book has 274 pages and 142 cuts.

3 | Maple Sugar and the Sugar-bush** 35
By Prof. A. J. Cook. This was written in the spring of 1887 at my request. As the author has, perhaps, one of the finest sugar-camps in the United States, as well as being an enthusiastic lover of all farm industries, he is better fitted, perhaps, to handle the subject than any other man. The book is written in Prof. Cook's happy style, combining wholesome moral lessons with the latest and best method of managing to get the finest syrup and maple sugar, with the least possible expenditure of cash and labor. Everybody who makes sugar or molasses wants the sugar-book. It has 42 pages and 35 cuts.

1 | Poultry for Pleasure and Profit** 10
11 | Practical Floriculture, Henderson* 1 35
10 | Profits in Poultry* 90
2 | Practical Turkey-raising 10
By Fanny Field. This is a 25-cent book which we offer for 10 cts.; postage, 2 cts.

4 | Peabody's Webster's Dictionary 10
Over 30,000 words and 250 illustrations

2 | Rats: How to Rid Farms and Buildings of them, as well as other Pests of like Character 15
This little book ought to be worth dollars instead of the few cents it costs to any one who has ever been troubled with these pests, and who has not! It is written in such a happy vein that every member of the family will read it clear through, just about as soon as they get hold of it. It contains a complete summing up of the best information the world can furnish.

1 | Silk and the Silkworm 10
10 | Small-Fruit Culturist, Fuller 1 40

10 | Success in Market-Gardening* 90
This is a new book by a real, live, enterprising, successful market-gardener who lives in Arlington, a suburb of Boston, Mass. Friend Rawson has been one of the foremost to make irrigation a practical success, and he now irrigates his grounds by means of a windmill and steam-engine whenever a drought threatens to injure the crops. The book has 208 pages, and is nicely illustrated with 110 engravings.

| Ten Acres Enough 1 00
| The Silo and Ensilage, by Prof. Cook, new edition, fully illustrated 25
| Talks on Manures* 1 75
This book, by Joseph Harris is, perhaps, the most comprehensive one we have on the subject, and the whole matter is considered by an able writer. It contains 366 pages.

2 | The Carpenter's Steel Square and its Uses. 15
10 | The New Agriculture; or, the Waters Led Captive 75
2 | Treatise on the Horse and his Diseases 10
5 | Tile Drainage, by W. I. Chamberlain 35
Just out. Fully illustrated, containing every thing of importance clear up to the present date.
The single chapter on digging ditches, with the illustrations given by Prof. Chamberlain, should alone make the book worth what it costs, to every one who has occasion to lay ten rods or more of tile. There is as much science in digging as in doing almost any thing else; and by following the plan directed in this book one man will often do as much as two men without this knowledge. The book embraces every thing connected with the subject, and was written by the author while he was engaged in the work of digging the ditches and laying the tiles HIMSELF, for he has laid literally miles of tile on his own farm in Hudson, O.

5 | Tomato Culture 35
In three parts. Part first—by J. W. Day, of Crystal Springs, Miss., treats of tomato culture in the South, with some remarks by A. I. Root, adapting it to the North. Part second—By D. Cummins, of Conneaut, O., treats of tomato culture especially for canning-factories. Part third—By A. I. Root, treats of plant-growing for market, and high-pressure gardening in general. This little book is interesting because it is one of the first rural books to come from our friends in the South. It tells of a great industry that has been steadily growing for some years past; namely, tomato-growing in the South to supply the Northern markets. The little book, which is fully illustrated, gives us some pleasant glimpses of the possibilities and probabilities of the future of Southern agriculture. Even though you do not grow tomatoes to any considerable extent, you will find the book brimful of suggestions of short cuts in agriculture and horticulture, and especially in the line of market-gardening.

2 | The New Celery Culture 15
This summing-up of this new industry amounts to this: You fix your ground just as rich as you can possibly get it, with stable manure, chemical fertilizers, or any thing else that will do the business. Then put out your plants 7 inches apart each way, and give them water enough to make them boom right along from the word go. The idea is somewhat new; but enough succeeded in 1892 to demonstrate that, like the new onion culture, it promises great possibilities.

3 | Winter Care of Horses and Cattle 35
This is friend Terry's second book in regard to farm matters; but it is so intimately connected with his potato-book that it reads almost like a sequel to it. If you have only a horse or a cow, I think it will pay you to invest in the book. It has 44 pages and 4 cuts.

8 | What to Do and How to be Happy While Doing It, by A. I. Root 50
3 | Wood's Common Objects of the Microscope** 47

NEW BOOKS ON GARDENING.

2 | Celery for Profit, by T. Greiner 25
The first really full and complete book on celery culture, at a moderate price, that we have had. It is full of pictures, and the whole thing is made so plain that a schoolboy ought to be able to grow paying crops at once, without any assistance except from the book.

3 | Onions for Profit 45
Fully up to the times, and includes both the old onion culture and the new method. The book is fully illustrated, and written with all the enthusiasm and interest that characterize its author, T. Greiner. Even if one is not particularly interested in the business, almost any person who picks up Greiner's books will like to read them through.

5 | Manures; How to Make and How to Use them; in paper covers 45
6 | The same in cloth covers 65
Covering the whole matter, and discussing every thing to be found on the farm, refuse from factories, mineral fertilizers from mines, etc. It is a complete summing-up of the whole matter. It is written by F. W. Sempers.

7 | Market-gardening and Farm Notes, by Burnett Landreth 90
The Landreths are the pioneer seedsmen of America; and the book is worth fully as much as we might expect it to be. I think I received hints from it worth the price, before it had been in my hands fifteen minutes. It is exceedingly practical, and tells what has been done and what is BEING done, more than it discourses on theory.

A. I. ROOT, Medina, O.

Bee-Hives.

Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue 23-22db

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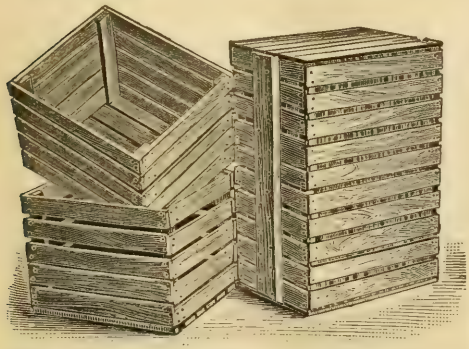
Send for catalogue free. Address **SAMUEL JONES,** Highland Park College, Des Moines, Iowa. 1-19db

BUSHEL BOXES.



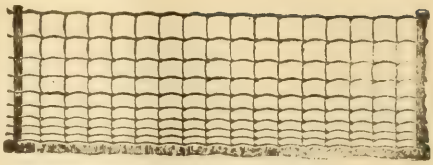
The above cut shows our new-style *all-slatted bushel box.* We have two other styles; one has slatted bottom and sides with solid ends in three pieces called the *slatted bushel box.* The other has solid ends and close bottom and sides, and is bound with galvanized iron and called the *galvanized bound box.* These boxes were devised by T. B. Terry for handling potatoes, for which purpose nothing could be handier. The potatoes are picked up into the boxes in the field and left in them till sold. Other crops, such as cucumbers, tomatoes, and apples are being handled in these same boxes. They are of such a size that two go crosswise in an ordinary wagon-box. Outside measure is 14¾x16⅞x12½ deep, and they hold a bushel of potatoes level full so they can be piled one upon another. The above cut shows two *all-slatted* boxes nailed up, and a bundle of 15 alongside; 13 of the 15 are in the flat, packed inside the other two, and nails of the proper kinds are included. The *slatted* and *galvanized bound* boxes are put up in the same way, except there are only 12 in a package instead of 15. Each package weighs about 85 to 90 lbs.

PRICE LIST.

All-slatted bushel box, per crate of 15..... ...$1 50
Slatted bushel box, per crate of 12..... ..1 50
Galvanized bound bushel box, per crate of 12....2 10

In lots of ten crates, 5 per cent discount will be deducted. Price each, nailed, 15, 18, and 22 cents, respectively. A 20-page pamphlet called Handling Farm Produce, telling all about these boxes, mailed free on application.

A. I. ROOT, Medina, O.



Why not Advertise Prices?

many inquirers ask. Well, there is so much to say about this fence that we can't attempt to tell it all in a small ad. For years we have published a monthly paper devoted wholly to Page Fence. This is sent free with descriptive price list to all inquirers.

PAGE WOVEN-WIRE FENCE CO., Adrian, Mich.

GOOD NEWS TO THE HELPLESS.

For illustrated catalogue of **INVALID-LIFTER** by which a child can tenderly lift you to and from Chair, Bed, Bath, Carriage, turn over in bed, hold in reclining position, or on a stretcher until your bed is made. **A. BEESON, Loveland, Colo.**

Selling Out!

Wishing to quit the supply business I offer at Root's prices and Root's make one No. 15 Cowan extractor at $10; two No. 5 Novice extractors, $14; one second-hand No. 5 Novice extractor at $5; one second-hand four-frame Stanley automatic extractor, $15. Both second-hand extractors are in good repair, but have been used. 3,000 white sections, 2000 cream sections, for Dovetailed hive; 50 lbs. brood foundation at 45c; 25 lbs. of surplus foundation, 55c; two Crane and two Clark smokers; two B. & H. honey-knives. Speak quick, as I will have no more when these are gone. Make money-order payable at Clifton, Tex.

J. N. COLWICK, Norse, Tex.

Winter and Shipping Cases

Are now in season. Get our prices on same.

I. J. STRINGHAM, 105 Park Place, N. Y.

21-20db Please mention this paper.

Cash for Beeswax!

Will pay 21c per lb. cash, or 24c in trade for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 28c per lb., or 30c for *best selected wax.*

Unless you put your name *on the box,* and notify us by mail of amount sent, I can not hold myself responsible for mistakes. It will not pay as a general thing to send wax by *express.*

A. I. ROOT, Medina, Ohio.

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SPECIAL NOTICES.

STILL ANOTHER REDUCTION IN THE PRICE OF WINTER ONION-SETS.

As our supply of sets still holds out, we make another reduction in prices as follows: Peck, 40 cts.; bushel, $1.50. If wanted by mail, add 10 cts. per quart extra for postage and packing.

FREEMAN POTATOES FOR SEED.

Our Freeman potatoes are now dug and put into the cellar, and I am sure the seed is pure and reliable, for there is not a potato in the lot that differs in color, shape, or in any way, from the rest. At present we can make the following prices, subject to advance or decline, as the market may demand. I would, however, suggest ordering now, lest we have the same stampede for them next spring that we had last spring: 1 lb. by mail, 25 cts.; 3 lbs. by mail, 60 cts.; 1 lb. by express or freight (sent with other goods), 10 cts.; 1 peck by express or freight, 75 cts.; 1 bushel, $2.00; barrel, containing 11 pecks, $4.00. The above prices are for large selected potatoes. For small potatoes, running, say, from the size of a hickorynut up to that of a small hen's-egg, 1 lb. by mail, 20 cts.; 3 lbs. by mail, 45 cts.; 1 lb. by express or freight, 7 cts.; 1 peck by express or freight, 40 cts.; 1 bushel, $1.25; barrel, containing 11 pecks, $3.00. Now, as there are going to be a good many small potatoes this year I want to say a word or two in their favor. During the past season T. B. Terry had better potatoes from small seed than from large; but—the small seed was saved by his method of burying, so the potatoes were not sprouted at all at the time of planting. They were just as solid and firm as when dug; and the large potatoes that did not do so well were some he bought because he ran short, and they had put out sprouts enough so that some of the sprouts were broken off when they were planted. This, however, only goes to show that small potatoes well kept are better for seed than large ones not in good condition at the time of the planting. One thing more: The Freeman potato is perhaps the nicest potato to bake that we have in the market, unless it is the old-fashioned Snowflake. Well, these second-sized potatoes, especially the largest of them, are just a nice baking size, and I should not wonder if they were worth $3.00 a barrel (the price we charge) for table use, especially if potatoes are high and not of very fair quality where you are located.

CONVENTION NOTICES.

The Susquehanna Co. Bee-keepers' Association will meet at Jay's Hotel, in New Milford, on Thursday, Oct. 12, at 10 A.M. All are cordially invited. H. M. SEELEY, Harford, Pa.

The eighth semi-annual convention of the Missouri State Bee-keepers' Association will be held at Pertle Springs, near Warrensburg, Mo., Oct. 18, 19, 20, 1893. The M. P. R. R. Co. will sell tickets 1½ fare, certificate plan. All are invited.
P. BALDWIN, Sec., Independence, Mo.

THE COLUMBIAN MEETING OF THE BEE-KEEPERS OF NORTH AMERICA.

The North American Bee-keepers' Association will hold its 24th annual convention on the 11th, 12th, and 13th of October, 1893, in Chicago, Ill.

PLACE OF MEETING.—A hall for the use of the convention has been secured in the "Louisiana Hotel," at the corner of 71st Street and Seipp Avenue, only a few minutes' walk from the south entrance to the World's Columbian Exposition. This hall is large, well lighted, and in a quiet place.

HOTEL ACCOMMODATIONS.—The Louisiana Hotel itself will furnish comfortable accommodations to a large number of the members, at very moderate prices. For a small room two persons pay daily 75 cts. each. Larger rooms occupied by two at $1.00 per person. Four persons occupying a room having two beds will pay 50 cts. each. Meals can be obtained in the hotel at reasonable rates, or at numerous restaurants in the vicinity. It is best to engage rooms by letter beforehand. The proprietors of the Louisiana Hotel give us the use of the hall free, expecting that many of the members will take rooms with them; and as the prices are moderate, and the rooms are neat and convenient, it is but just for all who can well arrange to stop there to do so. For this purpose, address "Manager of Louisiana Hotel, corner 71st Street and Seipp Ave., Chicago," stating what priced room is wanted.

RAILWAY TICKETS AND BAGGAGE.—Most of the railways ticket to the Exposition Depot, near which the Louisiana Hotel is located; and baggage should be checked to that station, thus avoiding extra charges, as it is about seven miles from the city stations to the World's Fair grounds. Information as to rates of travel, time tickets are good, etc., can be obtained of all local ticket agents. From many points—especially from cities having numerous competing lines—excursions will be starting which will permit those who can take advantage of them to go and return at the usual rate for one fare.

PROGRAMME AND ATTENDANCE.—The programme, of which further notice will be given, consists of interesting papers by well-known specialists, and discussions of topics which will interest honey-producers, queen-breeders, manufacturers of apiarian supplies, publishers and editors of bee-literature, and dealers in honey and wax. Viewing the various foreign and home exhibits in apiculture at the World's Fair will form an attractive and instructive feature of the meeting, and the number of apiarists widely known here and abroad who will be present and take part in the proceedings is of itself a guarantee that this will be a highly interesting and enthusiastic meeting. Counting, therefore, upon a large attendance, the Executive Committee of the society has made arrangements accordingly. Let every State in the Union send the strongest possible delegation, and let every branch of our industry be represented at this great Columbian gathering. No other occasion is likely to occur in our generation when so much of interest can be seen and heard at the time of one of these meetings; and it is earnestly hoped that a much larger number of the bee-keepers of North America than has ever met at any previous convention will be able to avail themselves of this grand opportunity. A special invitation is extended to the bee-keepers of every foreign country.

NOTICE OF ATTENDANCE OR OF PRESENTATION OF PAPERS.—The Secretary is desirous of obtaining, as early as possible, the names of all who contemplate being present. Kindly notify him by card or letter; also any who may wish to present papers the titles of which have not yet been handed in, are requested to send to the Secretary at as early a date as possible the exact title and a very brief abstract of the article, which will enable him to assign the topic its proper place in the programme.

FRANK BENTON,
Secretary North American Bee-keepers' Association,
U. S. Department of Agriculture, Washington, D. C.

$1.00 Buys A Thoroughbred Cockerel, S. C. White or Brown Leghorns and B. Plymouth Rocks if sent to E. ANDERSON, Comanche, Tex., in Oct. 1893.

Only 75c for choice tested queens of Green's select strain, bred for business as well as beauty. Six for $4. Mismated, 25c. J. A. GREEN, Ottawa, Ill.

IF YOU WANT BEES

that will just "roll" in the honey, try Moore's strain of Italians, the result of 14 years' careful breeding.

Wm. Stevenson, Pasadena, Cal., says: "I have tried queens from several of the best queen-raisers, but have found none that equal your strain."

Reduced prices: Warranted queens, 80c each: 3 for $2.00. Safe arrival and satisfaction guaranteed. Those who have never dealt with me, I refer to A. I. Root, who has purchased of me over 600 queens. Circular free.

J. P. MOORE,
11-12d *Morgan, Pendleton Co., Ky.*

White SHIPPING-CASES.

To have your honey sell well, use our beautiful cases, 12 and 24 pound sizes. Send for illustrated catalogue of every thing needed in the apiary.
M. H. HUNT, Bell Branch, Mich.

Do You Know
THAT THERE ARE
Degrees of Reward

in Heaven, and that some will enter there "saved so as by fire"? For proofs and encouragement address **A. H. VAN DOREN, Box B, Camden, N. J.**, for 140-page cloth-bound book, 50 cts.

HONEY COLUMN.

CITY MARKETS.

ST. PAUL AND MINNEAPOLIS.—*Honey.*—The receipts of honey are quite liberal, especially since the last two weeks. A great deal of Wisconsin comb has arrived, and is in very good condition; this is being sold at 13½ to 16c; the lower price being for darker honey, which, however, does not meet with an active inquiry. California 1-lb. sections are selling at 14@16c. Two or three carloads of extracted honey have recently arrived, and sold at 6½@7c, there being little or no difference between white and amber as to price obtained in this market. Market steady; fair demand. The high prices quoted by near-by cities and other firms are not obtained. As the best of the season for comb honey is now coming on, we are willing to make liberal advances on both comb and extracted on application.
SMITH & AUSTRIAN,
Sept. 18. 290 East Sixth St., St. Paul, Minn.

BUFFALO.—*Honey.*—The honey-market is virtually the same as last quoted in values, but the demand has increased considerably, and will continue to as small fruit goes out of market. 14@15c is the top of the market for No. 1 one-pound combs, and 10@12c for No. 2; larger sizes and fuller boxes sell proportionately. We shall now be able to handle very liberal quantities of honey, and a little later more liberally than now. To those who wish to consign we will advance 10c per pound on all No. 1, and pay the freight; or we will make other arrangements to handle it immediately and settle for it in full, if people will send us a sample case of their honey so we can judge just what it is, at the same time name the very lowest price delivered in Buffalo.
BATTERSON & CO.,
Sept. 18. Buffalo, N. Y.

CHICAGO.—*Honey.*—Choice white comb honey continues to sell at 15@16c per lb. The demand has been quite good up to this time. We have been able to have receipts closed out very soon after arrival. Dark honey in the comb does not seem to be wanted. Sales are made at from 12c to 13c, some lower. Extracted honey not very active, selling at from 6c to 7c, some darker grades lower. Beeswax selling at 22c per lb. So far the quality of the honey received this season is equal to any thing we have ever handled, and our customers are using more of it than usual. R A BURNETT & CO.,
Sept. 13. 161 So. Water St., Chicago, Ill.

CHICAGO.—*Honey.*—We want honey, and ask you to ship all you have at once. Quote fancy selling at 16c; choice, 15c; No. 2, 13@14c; poor, 12c. With prospects of a large crop, we advise early shipments to the market, and can guarantee satisfaction. Extracted selling at 5½@7, depending on color, flavor, style of package, and quantity buyer will take. Beeswax, 22@24, and we have no stock on hand.
Sept. 19. S. T. FISH & CO.,
189 So. Water St., Chicago, Ill.

MINNEAPOLIS.—*Honey.*—Honey market in fine shape, only a few shipments of fancy honey arriving, and is being taken readily at from 16 to 18c per lb. Most of the honey arriving is rather broken or leaking. The trade will buy only fancy goods, dark honey being poor sale. Fancy white, 16@18c; choice white, 15@16c; choice dark, 12@13c.
J. A. SHEA & CO.,
Sept. 13. Minneapolis, Minn.

ALBANY.—*Honey.* No change to note in our honey market since our last. Receipts are light for this month, and prices firm for desirable size combs. Fancy white comb, 16c; good white, 14@15c; mixed, 12@14c; buckwheat and dark, 11@12c. Extracted more plentiful, especially mixed and off color, with light receipts of white. We hear of a good many bee-keepers who have produced extracted honey instead of comb, which may have been bad policy, as comb honey is much the best selling this year.
H. R. WRIGHT,
Sept. 22. 326, 328, 330 Broadway, Albany, N. Y.

CINCINNATI.—*Honey.*—Demand is slow for extracted honey with plentiful arrivals. It brings 5@8c on arrival. Choice comb honey is in good demand at 15@16c for best white in the jobbing way. Arrivals are good. Beeswax is in slow demand, with large arrivals at 20@23c for good to choice yellow.
CHAS. F. MUTH & SON,
Sept. 18. Cincinnati, O.

ALBANY.—*Honey.*—Receipts of comb honey liberal, and demand increasing. Extracted moving very slowly, and stock accumulating. We quote fancy white clover, 16@17; No. 1, 14@15; mixed, 12@13; buckwheat, 11@12. CHAS. MCCULLOCH & CO.,
Sept. 20. 393, 395, 397 Broadway, Albany, N. Y.

NEW YORK. *Comb Honey.*—Demand light, 1-lb. sections, white, 13@14c; fair, 11@12. One-pound sections in glass or paper cartons are preferred in this market. Beeswax, there is not a large stock in the market; it is worth from 24@27c, according.
Sept. 19. THURBER-WHYLAND CO.,
New York City.

KANSAS CITY.—*Honey.*—Stock of comb honey very light. Demand is good. We quote fancy white, 16c; No. 1 white, 15c; fancy amber, 14c; No. 1, dark, 13c. Extracted, white, 7c; amber, 6½c; dark, 5c.
HAMBLIN & BEARSS,
Sept. 18. Kansas City, Mo.

ST. LOUIS.—*Honey.*—We note no appreciable change in values, but sales are few. We quote comb, 10@14c; extracted, 4½@5¼c. Beeswax, 20¼c.
D. G. TUTT GROCER CO.,
Sept. 18. St. Louis, Mo.

KANSAS CITY.—*Honey.*—Honey has been in light demand. We attribute the same to the excessively hot weather. With cool weather we look for better demand. We quote white 1-lb. sections, 15@16; amber, 12@14. Extracted, white, 6½@7½; amber, 5@6. Beeswax, 20@22. CLEMONS, MASON & CO.,
Sept. 20. Kansas City, Mo.

CLEVELAND.—*Honey.*—Honey in fair demand. No. 1 white selling at 16½@17½ in 1-lb. sections. Not much call for No. 2 goods at present. Selling at 14@15c. Beeswax, 23c. Supply limited.
WILLIAMS BROS.,
Sept. 18. 80 & 82 Broadway, Cleveland, O.

DETROIT.—*Honey.*—Comb honey in good demand at 13@15c for white. No dark now offered. Extracted, 7@8c. Beeswax, 23@24c. M. H. HUNT,
Sept. 19. Bell Branch, Mich.

"DEAD-RIPE" HONEY.—Mostly clover and linn. Been tiered up on the hives through the hot weather; $4.50 per can (60 lbs.); darker, $4.00. Samples by mail, 5c each. 19tfdb
OLIVER FOSTER, Mt. Vernon, Linn Co., Iowa.

FOR SALE.—5000 lbs. of extracted white-clover and basswood honey; it is No. 1 honey, thoroughly ripened up in hives. It is put up in 60-lb. tin cans. I will take 7c per lb. delivered on cars here.
F. W. HOLMES, Coopersville, Ottawa Co., Mich.

FOR SALE.—2000 lbs. of fine comb honey, in 1-lb. sections, 24-lb cases, and 2000 lbs. of clover and basswood honey, in 60-lb. square jacket cans. Sample of extracted honey by mail on application.
EZRA BAER, Dixon, Illinois.

WANTED.—To buy 50,000 lbs. of white comb honey in small single-tier cases.
B. WALKER, Evart, Mich.

FOR SALE.—Extracted clover and basswood honey at 8c per lb. M. ISBELL, Norwich, N. Y.

FOR SALE.—About 800 lbs. white clover honey in 1-lb. boxes, packed in 24-lb. single-tier cases, at 14c per lb. delivered at R. R.
WM. VAN AUKEN, Woodville, Jeff. Co., N. Y.

BUFFALO, N. Y. Unsurpassed Honey Market.
BATTERSON & CO. Responsible, Reliable, Commission Merchants. 18tfdb **and Prompt.**

CHAS. ISRAEL & BROS., 110 Hudson St., N. Y.
WHOLESALE DEALERS & COMMISSION MERCHANTS. *Honey and Beeswax.*
Established 1875.

WANTED.—BEESWAX.—Will pay highest cash price for same.
I. J. STRINGHAM, 105 Park Place, N. Y city.

QUEENS. I have a large lot of fine, untested, Italian queens, and to dispose of them as quickly as possible, that the nuclei may be united, I offer them at 75c each, or a queen and the REVIEW from July (when the Experiment Apiary reports began) to the end of the year for an even $1 00.

W. Z. HUTCHINSON, Flint, Mich.

PORTER BEE ESCAPES are used and pronounced a great labor-saving implement by **Chas. Dadant & Son, Prof. A. J. Cook, Chas. F. Muth, Jno. S. Reese, J. H. Martin, John Andrews, F. A. Gemmell, Wm. McEvoy, A. F. Brown, Thomas Pierce,** and many other prominent bee-keepers. Descriptive circular and testimonials mailed free. PRICES: Each, post-paid, with directions, 20c.; per doz., $2.25. *Return them and get your money back after trial if not satisfied.* For sale by dealers. Address **R. & E. C. PORTER LEWISTOWN, ILL.**

Oh, Mamma!

Have you heard of the

FREE

200-Page Bee-Book

given to every **NEW** Subscriber to the old

AMERICAN BEE JOURNAL?

Oldest, Largest, Best, Cheapest and the only **Weekly** Bee-Paper in America. 52-pages. **$1** a year. *Sample free*

GEO. W. YORK & CO

56 Fifth Avenue, CHICAGO, ILL.

To new subscribers: the journal alone sent for 3 months for 20 cents.

Queens Yellow to the Tip.

Great big yellow beauties, worth many times their weight in gold. That is the kind of queens Trego raises.

Who Buys Them?

Geo. E. Hilton, W. Z. Hutchinson, W. S. Hart, J. F. McIntyre, Jas. A. Green, and about 500 others not so well known. For the rest of the season there will be very few drones near me except very yellow ones, and nearly every queen should get 4 and 5 banded bees.

Ventura, Cal., Aug. 18, 1893.

S. F. Trego:—Enclosed find $5.00 for 6 queens. Since I have been in California I have bought queens of nearly all of the principal breeders in the U. S., but I never had queens that gave me the satisfaction in all points that yours do.

L. E. MERCER.

Mr. M. is one of California's great honey-producers, and ought to be a good judge of queens.

One warranted queen, $1.00; six for $5.00. Money-order office Cable, Ill.

S. F. TREGO,

Swedona, = = = Ill.

PATENT WIRED COMB FOUNDATION

Has No Sag in Brood-frames.

Thin Flat-Bottom Foundation

Has no Fishbone in the Surplus Honey.

Being the cleanest, it is usually worked the quickest of any foundation made.

J. VAN DEUSEN & SONS,

Sole Manufacturers,
Sprout Brook, Montgomery Co., N. Y.

BIG DISCOUNT on Foundation and Sections. Thin foundation, 50 cts. per lb.; brood, 40 cts. No. sections, $2.75 per M. Every thing cheap, price list free. E. H. TRUMPER, Bankers, Mich.

Great Reduction.

Sections at greatly reduced prices. Hives, Shipping-cases, etc., at Bed-Rock Prices. Write for free Illustrated Catalogue and Price List.

G. B. Lewis Co.,

Watertown, = = = Wis.

1tfdb Please mention this paper.

AUGITE STOVE-MATS

We first offered this article for sale in November, of last year; and since that time we have disposed of about 150 gross, or over 20,000. Very many of our readers are already supplied, and appreciate the blessing they have been to them. They are, in fact, a household necessity. Probably many of those first sent out now need replacing with new ones, or perhaps an extra one would not come amiss during the fruit-canning season, especially when it will cost you nothing. Certainly you could make no worse use of it than to present it to a neighbor who has not yet learned of its value. If your subscription is in arrears we will require that you pay all arrears and a year in advance in order to secure this premium. If you secure a new subscription to send along with yours you may offer such person GLEANINGS till the end of 1894 from the time you take the subscription for $1.00, and we will give you another stove-mat for securing the name and sending it along with yours together with $2.00 to cover both subscriptions.

Ladies' Toilet-case.

This is something that many ladies will find invaluable. It contains 238 useful articles as follows: 100 sewing-needles (4 papers); 1 highly polished steel bodkin; 2 double long yarn-darners; 2 medium long yarn-darners; 2 fine long yarn-darners; 2 double long cotton-darners; 2 fine cotton-darners; 2 wool-darners; 2 short yarn-darners; 2 looping needles; 2 crewell needles; 2 straw or milliners' needles; 2 glovers' needles; 2 button needles; 1 chenille or lace needle; 1 tapestry or rug needle; 2 bonnet-pins; 2 hat-pins; 2 shawl-pins; 2 cloak-pins; 6 toilet-pins; 96 white pins; 1 crochet-needle.

These, if bought separately in stores, would cost from one to two dollars. The price printed on this case is 35 cents. We will send one postpaid for 30 cents; 4 for $1.00, or 10 for $2.00; or to any one who will send us a new subscription to GLEANINGS, and $1.00, we will present free postpaid one of these valuable cases.

A. I. ROOT, Medina, Ohio.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.
ILLUSTRATED SEMI-MONTHLY
PUBLISHED BY A. I. ROOT
$1.00 PER YEAR MEDINA OHIO

Vol. XXI. OCT. 1, 1893. No. 19.

STRAY STRAWS

FROM DR. C. C. MILLER.

LOUISIANA HOTEL, Chicago, Oct. 11, 12, 13.

SEPTEMBER 18 broke the long drouth at Marengo.

PRICES OF HONEY haven't come down yet, and I don't believe they're going to me down much.

NOW RAMBLER'S mind will a be torn to pieces till he finds out whether "Anonymous," on p. 710, is a widow or—or—what.

MORE BEE-KEEPERS will probably meet in Chicago Oct. 11 than have ever met at one time and place before—on this side of the big pond.

A GRAND HONEY-FLOW and a big crop don't always go together. In some places there was a fine flow but not bees enough to take care of it.

"WE HAVE NEVER seen so fine and so complete a work on apiculture as Root's A B C," says the editor of *Le Rucher*. There's a Frenchman of good judgment.

QUITE A PICTURE GALLERY is given in the last *Nebraska Bee-keeper*, which, with sketches of the western bee-keepers shown, makes an interesting number.

W. C. FRAZIER make some good points on page 701. Now, how shall we focus on these points the gaze of those to whom we must look for proper appropriations?

THE CALIFORNIA OUTPUT of honey, at least in the southern part of the State, according to C. N. Wilson, in *Rural Californian*, is not more than two thirds of the average.

IN ANSWER to your question on p. 705, friend Root, a late *Bienenzeitung* gave among other items from an apparently careful observer, an account of a queen fertilized the second time.

AT THE WORLD'S FAIR some of the finest-looking sections are shown lying on the side. It helps to make a better show, for the wood of the case covers up any imperfection at the sides of the section.

BEET SUGAR is still bitterly opposed in England as food for bees. If there is any chance of cane sugar being any better, I'm sure the cane may as well be used. But how are you to tell whether sugar has been made from cane or beets?

JUST WHEN we think we have something settled, along comes a batch of statistics from that troublesome old bach, Hasty, and knocks things endwise. Taking his table as a basis (p. 700.) it seems we might cut queen-cells 5 days after swarming, and again 6 days later. But I wouldn't pin my faith to cell-cutting anyhow. All the same, that's a valuable table.

THE ST. LOUIS MARKET, which I visited a few days ago, hadn't a single section that I saw that a bee-keeper would want to set on his own table, even if there were no company present. That market seems to be largely for extracted honey.

GRAVENHORST agrees with Dzierzon, that one reason of the fatality in winter and spring in America lies in single hives and another in hives with movable covers. Remember their covers are fast, and the frames handled from the side or bottom.

THE WOMEN-FOLKS from our house are going to be represented at the Chicago convention. Why not from everywhere? Let's have a family gathering, and have a jolly time getting acquainted. How many women are going from Medina, Bro. Root?

PREVENTION OF SWARMING is one of the live topics; but too often an article on prevention begins, "When a colony swarms," and then I sadly pass it by without further reading. I don't want to know what to do when a colony swarms, but how to keep it from wanting to swarm.

QUITE A DISCUSSION is going on in *A. B. J.* as to the amount of honey on exhibition in the World's Fair by the State of New York. But there will hardly be an agreement so long as one figures only the sections that can be seen as on exhibition, and the other counts all that are in the case.

STARVATION is sometimes mistaken for paralysis, according to H. F. Coleman, in *A. B. J.* When no honey is coming in, he says the bees do not feed each other; and young bees hatching out of the central combs starve to death, although plenty of honey may be two or three comb away—a new idea, whether correct or not.

DR. TINKER reports, in *A. B. J.*, an apiary of 11 colonies of the ugliest bees to handle he ever saw, located close to the business center of a city, and they have never stung any one outside of the fence that incloses them, although several families live very close, and one not over 40 feet from the bees. He doesn't say how high the fence is, but I suspect it's pretty well up.

THE LANGDON non-swarmer has been reported as smothering swarms because there is room for only one bee to get out at a time. I have doubts about that. I suspect that the passage was stopped entirely. Mine was by a

dead drone. Bees ought to be able to get out of a hive one at a time before danger of smothering. But the exit of the cone can easily be made larger.

My experience does not agree with that given by Bro. Hutchinson on page 712. Swarms uniting, and swarms returning to the wrong hives, are sources of trouble with clipped queens, without doubt. But I see no reason why swarms without queens should unite more readily than those with queens, and a large experience through many years makes me think they do not. And when they do unite, I think a majority of the bees get back to their own hives.

C. H. J. Gravenhorst, the editor of that ably conducted German bee-journal, *Illustrierte Bienenzeitung*, is no stranger to the readers of Gleanings, having contributed to its columns. From his writings, and the vigorous manner in which he edits his paper, I have always thought of him as a man in the thirties or forties. What was my surprise to learn lately that he had just reached his threescore years and ten! He must grow on good soil.

CELLAR WINTERING, ETC.

A SEASONABLE ARTICLE BY G. M. DOOLITTLE.

A correspondent writes: "I desire to try cellar wintering with my bees the coming winter, as I have not been very successful in wintering out on summer stands. Will it do to put the bees in a cellar where persons are going in after vegetables every day? and how is it best to arrange the bees and cellar? Please reply through the columns of Gleanings."

A cellar which will keep vegetables will answer very well for the bees; and the going into it every day need not disturb wintering bees if the persons entering are cautioned about jarring them, or needlessly disturbing the hives, especially if the bees are placed so that the light from the lamp does not strike where it will shine into the hives. If the cellar is kept dark during the winter, all that is necessary to do is to hang a thick blanket in front of the hives to dim the rays from the lamp; but if the cellar is light, a place in one corner should be partitioned off so as to make the part which is to contain the bees dark. Bees have been wintered well in cellars where the light of day was allowed to enter; but as a rule, bees winter best in a cellar into which no light from the sun ever enters while they are in it. The hives should also be up one or two feet from the cellar bottom, the bench or platform on which they stand resting on the ground, instead of being nailed to the sleepers above, otherwise the jar caused by any movement on the floor above would disturb the bees, and tend to make them uneasy, thus causing their loss. Rats and mice should also be excluded from the cellar where bees are to be wintered; for of the two I would rather chance the jar of children playing over bees than of rats and mice running about and through the hives. Many bees are lost each year from rats and mice in cellars during the winter. The full entrance to the hive should be given where fast bottom-boards are used; and with movable bottom-boards the same should be left on the summer stands, and the hives raised two or more inches above the bench or hives on which they rest. Where honey-boards are used, I prefer to remove them, substituting several thicknesses of old carpet, or else a chaff or sawdust cushion two or three inches thick, through which the moisture from the respiration of the bees may escape, but still keep them dry and warm. The bees should be set in about the middle of November, and taken out about the time the soft maples and elms are in bloom. Some recommend setting in later and taking out earlier; but my experience has been that the sudden changes, both in the late fall and early spring, are very damaging to bees, whether wintered in the cellar or out of doors, and it is best to avoid them where we can as well as not, as is the case in cellar wintering.

A few still recommend taking the bees out during a warm spell in winter, to give them a fly, so they can void their feces; but if they are quiet, I consider it much better to leave them undisturbed. Bees can retain their feces five months in the cellar much easier than they can three and one-half months out of doors, providing the cellar is suitable to winter bees in at all. The right temperature of a cellar to winter bees well is from 42 to 45°; but if fixed as above given, they will do very well as low as 35 to 40°. If the cellar is one where the temperature goes as low as the freezing-point, and stays there any length of time, I should prefer to leave the bees on their summer stands, unless I had some suitable means of warming it which was easily controllable; for a continued temperature at about the freezing-point, or a little below seems to be very injurious to bees.

UNITING BEES.

Another correspondent writes, saying: "I have some weak colonies of bees which I fear will not winter as they are. How would it do to unite two of these weak colonies together for winter?"

This is the proper thing to do, for two weak colonies kept separate will consume nearly twice the stores which both would united, and very likely perish before spring; while, if put together, they would winter as well as any large colony. My way of uniting such colonies is as follows: If one of the queens is known to be feeble or inferior, hunt her out and kill her, so that the best queen may survive; otherwise, pay no attention to the queens, for one of them will soon be killed after uniting. Having the queen matter disposed of, go to the colonies you wish to unite, and blow smoke quite freely in at the entrance, pounding on top of the hive at the same time with the doubled-up fist. When both have been treated in this way, wait a moment or two for the bees to fill themselves with honey, when one is to be put on a wheelbarrow and wheeled to where the other stands, and both opened. Now select out the combs from both hives which contain the most honey, setting them in one hive. In thus setting in, it is always best to alternate the frames, whereby the bees are so mixed up that they generally have no desire to fight, for each bee touched by another is a stranger. After the hive is filled, arrange the quilt or honey-board, and put on the cover. Next put a wide board in front of the hive, leading up to the entrance, and proceed to shake the bees off the remaining frames, taking first a frame from one hive and then one from the other, thus mixing the bees as before. After all are in, set a board up against the front of the hive, sloping over the entrance, so that the next time the bees fly they will bump against it, thus causing them to mark their location anew, so that they will not return to their old place and get lost. Also remove all relics of the old hive, so there is no homelike look about their old location to entice them back. Put the remaining combs away in some safe place for the next season's use, and the work is done.

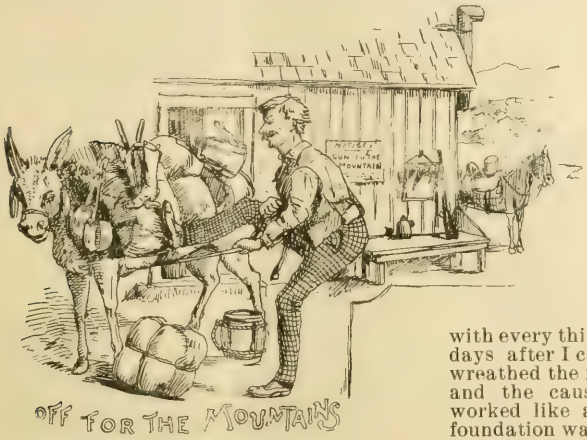
Borodino, N. Y. G. M. Doolittle.

RAMBLE 93.

NEW OR OLD COMBS.

The delightful and invigorating experience I enjoyed in Cold Water Canyon gave me a desire for a still further experience of nearly the same kind in the higher altitudes of the noble San Bernardino Mountains; and on Aug. 10th the Rambler might have been seen astride a fine horse, loping across the country from Redlands to San Bernardino, a distance of nine miles.

The benefits of a horseback ride, from the point of view of health, can not be overestimated. There is not a corpuscle of blood, nor a ganglion nor a nerve center, but gets shaken up; and there can be no stagnation in the system of an habitual horseback-rider. The fresh morning fragrance of the gum-trees, in



the shade of which I galloped, and the companionship of a strong and noble animal, were also factors not to be lightly considered. A recent writer claims that the evidences of revelation and reason prove that there is a future life for horses; and if any animal deserves the honor of a happy future it is surely the noble and useful horse. When we descend from the horse and get astride the cycle we lose the companionship, for the latter is only a machine, and that is where it fails in its comparison to a horse.

My destination was the ranch of our bee-keeping friend Mr. Geo. Ferguson, a little beyond San Bernardino. At this rendezvous our friend Wilder, the expert hunter and camper, was to meet me, and from thence we were to strike direct for the mountains for a sojourn of several days. Arriving some little time ahead of my friend I had the opportunity of visiting awhile with Mr. Ferguson, who was busy irrigating his field of corn. We gradually drifted to the house and the shade, and our conversation there naturally fell into the topics of bee culture; and old versus new combs were fully discussed. While we find now and then a bee-keeper who advocates the renewing of his combs with new foundation every four or five years, we rarely find one who puts it into practice. Mr. F. said that he never renewed a comb as long as it could be used, and he had some in his hives that he knew were fifteen years old. The Rambler had also used combs in his eastern apiary that were twelve years old, and in both cases no bad results were visible. In the use of old combs our experience was similar, in observing that bees will store honey in an old comb in preference to a new one. If four old combs and four new ones are inserted in a super, either alternate or each four by themselves, the four old combs will be filled with honey before the new ones show much honey. Experiencing this inclination of the bees in such a marked manner, we concluded that the reason why the honey was stored in the old combs was their better heat-retaining qualities, and that the ripening process was more rapid in such combs. Another point, these old black combs are renewed to a much greater degree than many think. The uncapping process, the inroads of the moth-miller, and various mishaps to the comb when used for several years, renew the outer ends of the cells if not the base; and we left the discussion of old versus new combs with a resolve to never throw away a good comb, even if it were black with age.

We also agreed upon the generous use of foundation; and upon a comparison of notes found that there was much difference in the working of mills, even from the best of care in the manufacture. Although the Root mills are made with care, and nicely adjusted machinery, there seems to be one occasionally that refuses to do good work. The Rambler brings vividly to mind a California bee-keeper who was struggling with a mill that had a kink for contrariety in it; and said bee-keeper was not only sweating, but using very profane language with every thing connected with the mill. A few days after I called again, and satisfied smiles wreathed the face of the former profane man, and the cause was a new Root mill which worked like a charm, and beautiful section foundation was being rapidly rolled out without a hitch.

Mr. F. had experienced trouble of a similar kind, except the swearing; and I mention the above fact as a sort of hint to the makers of foundation-mills in the Home of the Honey-bee, that their best machines are real missionaries among those who are inclined to be profane when crosses are laid upon them. This should surely be an incentive to make every mill a perfect one, as I have no doubt they now are, for the bad-working mills were made at an earlier date.

In the midst of our conversation my traveling companion Wilder came brushing through the orange-trees, mounted on a large gray horse, and leading the bronco Vick, with a jack saddle loaded down with camp equipage and two guns. Our friend, who is very urbane and well poised in demeanor, was evidently laboring under great excitement; and, leaping from his horse, he proceeded to inform us, with much suppressed emotion, that the greatest advance ever made in bee culture was about to be accomplished.

"Do tell!" said I.

"You don't say!" said F.

"Well, gentlemen, the working time of the honey-bee is about to be doubled. It may seem to be a mean trick to play upon the already overworked bee; but the fact is, a report comes from the World's Fair that a California bee-keeper, not yet satisfied with his wonderful yields of honey, is trying to breed a cross between the Italian bee and the American lightning-bug. The great advantage is apparent—the bee can then carry its own light, and work night and day."

"Wonderful! remarkable! eureka!" shouted Mr. F. and I, rising in excitement to our feet.

"There is one obstacle, however, to overcome," said our friend; "and that is, to get the light located in a position of the bee's body where it will do the most good; and it is thought best to turn the matter over to some expert breeder of bees. Now, gentlemen, whom would you suggest?"

THE ELECTRIC BEE.

"Well, gentlemen," said I, "you know that I have admired and advocated Henry Alley's system of queen-rearing, and, furthermore, Mr. Alley has a way of getting there second to none in the bee-keeping world. He has bred the yellow Carniolans from a gray race, and says he can also get there with yellow Punics, and I haven't the least doubt in the matter. Now let's give him a chance upon this lightning-bug scheme."

We all arose with a cheer for Alley and another for the California lightning honey-bee.

So far as California bee-keepers are concerned, I never saw a class of men so enthusiastic over a project as they are over this when it is first mentioned to them. They literally hug themselves with delight. With the many other improvements in progress there is nothing to prevent California from supplying the whole wide world with honey.

Our discussion of these great questions delayed our dinner somewhat, but we got to it at last with sharpened appetites. At precisely three o'clock, after the heat of 102° in the shade had somewhat subsided, we started for the mountains, loping off across the plain, kicking up a big dust, and shouting to our pack-horse to keep her on the gallop. In the twilight hour we entered Devil's Canyon. Above us, upon an immense and precipitous hogback, is pointed out to us the old Mormon trail by which the first white men came into this valley. One can almost imagine their surprise and delight, after days of hardship over the Mojave Desert, with their slow-moving ox-teams, to look down from this lofty height into a broad and fertile valley. Thus the Mormons came; better passes were soon discovered, and the old trail abandoned; but the washings of winter rains have so deepened the trail that the old landmark bids fair to remain there for ever.

The cooling streams of the canyon, and the agreeable shade and change from the hot plains, makes this a resort of many camping-parties; and I have no doubt that many more would be found here but for the rough nature of the place, which, with huge boulder and precipice, leaves but scant room for pitching a camp.

There is an abundance of honey flora in the mouth of this canyon, and it is taken advantage of by Mr. Joe Marshall, who has an apiary located here. It required something of a climb to get to the cabin, for it is hung, as it were, upon the steep side of the mountain. We found the house well anchored to the ground with brace-poles, for at times the wind howls through this place with great violence—Devil's Canyon!

We found the cabin a very good place to spend the night; and, in the absence of the owner, we picketed our horses in what we thought a patch of weeds; but when the light of morning came we discovered that our horses had spent a comfortable night in the garden; but inasmuch as our animals ate more weeds than "garden sass," we thought the damage not beyond our limited means, and stand ready to make amends for our blunder, which was made under cover of darkness.

Our night's rest was comfortable in the cabin—the last one we were to have for many nights. Partial to a good spring bed is the

RAMBLER.

THE ATCHLEY FAMILY.

AN ACCOUNT OF THE LARGEST QUEEN-REARING ESTABLISHMENT IN THE WORLD; METHODS EMPLOYED, ETC.

I will begin on the left. The first person is Willie. He is holding two frames with cells on them. The frame in his left hand has 25 cells nearly ready to hatch. They were built by two colonies, but all put into one after they were sealed. In his right hand is a frame with cell-cups just grafted, ready to place in a hive for the bees to go to work on. On the right-hand corner of the table are his two wax-cups. One of them is to be placed over the lamp; and at any time when the wax happens to get too hot he slips it off and puts on the other one; or when the wax gets too low in one cup he uses the other, etc.

Leaning up against the wax-cups are the cell-sticks, five in a group. Every time he dips he makes five cells, dipping six to eight times to get good stout cell-cups. Next you will notice a little box full of holes. This is about the size of a common cigar-box, with ⅜-in. holes. This is where the cells are placed while being moved. All are set in the holes point down, and can be carried quite a distance without injury. The next box is a similar one, containing his grafting-tools. You can see the razor with which he pares down the cells before lifting out the cocoons. Willie's main work is to dip his cell-cups in the early morning, while it is too cool to graft. In about half an hour he can dip what cells he will need during the day; then he goes to moving cells that are ready to hatch, into nuclei. This he usually works at till about ten o'clock. Then he and his ma begin grafting, one doing the grafting and the other placing the cell-cups in the cell-building colonies, taking it time about as we get tired. Then when the grafting is done for the day, Willie cages queens and looks after all the yards the remainder of the day.

The next person is Charlie, with his saw and hammer in his right hand, and his plane in his left. His post has been to nail up nuclei and prepare all shipping-boxes, etc. He also has a yard of nuclei to attend to, where he may be found, every chance he gets, doing his own grafting and caging. He has raised some section honey.

Just in front of Charlie is little Leah. She is one of the best helpers in the yard, for her size; and all during the day can be heard the words, "Leah, bring me a frame of brood from number so and so;" or, "Bring me an empty comb;" or, "Go cage a queen from No. 20," and all such as that. She can graft cells too, and has a yard of her own.

The next personage I will call your attention to is little Ives, sitting on a bee-hive. He has a frame of bees in his hands; and while the artist is trying to draw his attention he looks up at him, but goes right on blowing the bees

THE ATCHLEY FAMILY.

away and taking a bite of sealed honey. He is just two years old, and has often been found in different parts of the apiary with a hive open and a frame out, eating honey without smoke or veil; and when asked what he was doing he would say, "Awful good honey."

Just behind little Ives stands Mr. Atchley, who has been in bad health for many years, not being able to do any hard work; still, he is able to help keep up the correspondence, and works about the house at any thing needing to be done. While he has opened but few hives this year, he is thoroughly posted, and is a great teacher in apiculture. You will notice his left hand resting upon an A B C book, which he thinks stands without an equal as an instructor on bee-matters.

The next is your humble servant, with right hand hold of a type-writer, and left hand resting on "Doolittle on Queen rearing," to which we are indebted for giving us the inside track on raising queens on a large scale. It is useless for me to try to tell you what part of the work I perform, as I do some of all, going here and there pointing out things to be done, then, after the day has faded, I often hear the clock strike eleven before I lie down, and have gone to sleep with pen in hand. I looked a little careworn the morning the photo was taken, as it was on the morning of July 14th, about 8 o'clock (my birthday). I had been going at breakneck speed to get the house set to rights before the artist came. I am now 36 years old.

The next person, and standing close by my side, is little Rosa. She has a queen-cage in her hand, and she carries queens from the apiary to the house, where they are fixed up for the mails. While she does not take to the bees as does her sister Leah, she has her own bees also, and is said by Willie to have the best luck of any of the children, with her queens, as she seldom loses one in mating or otherwise.

The next is Amanda. She makes the most of the queen-candy, and she has become an expert at it too, as we have lost only a very few queens this year. She has bees of her own, and helps at any thing that comes up, including the cooking and housekeeping, and sometimes helps Willie dip cell-cups, grafting, etc., and is a fast hand at the extractor, she and Willie going three miles to an outyard this year and taking in one day a barrel of honey, besides doing other work in the yard. She is one of the best bee-keepers I have; and from the correspondence I have noticed lately from New York, I am getting a little scared, as I can not afford to lose one of my best bee-keepers just at this stage of the game.

The next is Napoleon, standing by the baby-carriage, with a frame of bees in his hand, resting it on the corner of his wheelbarrow. He does nearly all the hauling, as well as attend to his bees. He has raised quite a lot of queens himself this year, and has now just come up from his bees, and set his smoker on his wheelbarrow. He can place a hive of bees on his barrow and carry it to Charles, to be made into nuclei, and then scatter the nuclei quickly, or can do almost any thing that is to be done. He is going to be a bee-man some day, if he lives, notwithstanding he loves chickens. He sent to Mrs. Axtell last spring, and bought him a sitting of fine Plymouth Rock eggs; and out of thirteen he has raised nine fine chickens.

Last and least is little Thomas York, two months old; and his advent into the world made but little check in the queen-yards, as his mamma lay on the bed and grafted 200 queen-cells when he was but two days old, besides changing and recaging some queens that had come in by mail. He is trying to see how loud he can cry while the artist is trying to catch him quiet. He has good lungs, so says the artist.

Now I have given a part of the work that each performs; and when any branch of the work is getting behind, any or all take hold of it and help up. We can all be seen around a table at times, some making queen-candy, some fixing cages, some dipping cells; and while each one usually knows his line of work, he is often called on to perform any duty that comes up in the yards.

That part of the house shown is the southwest corner of the front gallery, and a portion of one room, with a cluster of running rosa-vines and morningglories for a background. While we have bought only about 600 queens this year, we are above the 4000 mark, and shall likely reach 5000 this year. There has not been a single day's work done in the yards by any one except the family; but we hired a man to transfer two days. So, dear readers, I leave you to judge as to whether we have worked or played. JENNIE ATCHLEY.

Greenville, Texas, Aug. 16.

[The following is a letter from a correspondent who had visited the Atchley yards:]

I have just come from Mrs. Jennie Atchley's, the greatest queen-breeder in the world, and I saw the boy that raises the most queens of any one in the world. Willie Atchley is the best and most extensive queen-breeder in the world. I saw him dip his cell-cups, and saw him extract the larva from the comb, and place it in the cells. He puts up, on an average, 150 cells a day, and grafts and removes as many ripe cells, besides caging a large number of queens, and does other work. Mrs. Atchley has between 800 and 1000 hives. All are run for queen-rearing. I visited all of their yards. They have five out-yards and one at home. They have 500 or 600 hives at home. They receive orders from all parts of the globe. They received two orders on the 10th from New Zealand and from Queensland—one for half a dozen, and the other for 20 pounds' worth. You ought to see little Rosa and Leah cage queens. Miss Rosa is 8 and Leah 6 years old.

Ozan, Ark. J. W. TAYLOR.

EXPERIMENTS IN APICULTURE.

SOME VALUABLE WORK DONE BY J. H. LARRABEE, FORMER APICULTURAL EXPERIMENTER AT THE MICHIGAN AGRICULTURAL COLLEGE.

A few weeks ago we received Bulletin No. 30, of the United States Department of Agriculture, containing in the latter part of it the report of the experiments in apiculture by J. H. Larrabee, at the Michigan Agricultural College. We intended to make notice of it before; and now having read it over, at least the apicultural part of it, we have decided to publish it entire, although our space is, as usual, crowded. Mr. Larrabee made an excellent experimenter; and we hope the department will see its way clear some time to engage his services again.

We commend the following report to the careful attention of our readers:

During the season of 1892 the branch station for experimenting in bee culture at the Michigan Agricultural College was continued at the expense of the U. S. Department of Agriculture, Division of Entomology, and of the Michigan State Experiment Station.

An effort was made to undertake a line of experiments closely connected with the practical work of the apiary. While all of the experiments undertaken have not given results of practical value, some have. Especially gratifying are the results

obtained in the experiments upon the subject of wax secretion and the evaporation of honey, for the reason that they were nearly free from those elements of uncertainty that must necessarily enter into nearly all experimental work in the apiary, such as season and condition of bees.

When the bees were taken from the cellar, on April 18, they were in rather poor condition, due doubtless to the dampness of the cellar and the character and amount of the stores. The loss during the winter and spring was about one-third of the number placed in the cellar.

In May and June the bees of the whole apiary were transferred from the old hives into the modern dovetailed hives, and from the old reversible frames, of three distinct sizes, to the new, wide, thick-top-bar frames of the Langstroth size. In this operation all drone comb or other imperfect combs were rejected and rendered into wax. By this change the apiary was placed upon a modern footing, the hives made uniform, the operations and manipulations of the apiary rendered more rapid, and its beauty and value increased.

The spring was very backward and rainy. During fruit-bloom the bees flew but little, and their influence upon the fertilization of the flowers of our fruits is seen in the almost complete failure in this vicinity of all tree fruits and others largely dependent upon the bees for the dissemination of pollen. As the rainy, cloudy weather did not cease until about the first of July, the early part of the clover bloom was lost to the bees. No supers were put on until July 8, and at that time strong colonies were swarming, with almost no honey in the hives. All of the white surplus was taken from basswood, which yielded well. July 25 the season for white honey closed. A little surplus of late honey was gathered during August, and the bees filled up the hives well for winter. A yield of about 25 pounds of surplus per colony was obtained, and there are now in the apiary fifty-five colonies in excellent condition for winter.

BREEDING.

During the year 1891 the apiary was entirely requeened, only a few old queens being reserved for breeding. This season the opportunity was taken to replace all those of the former year's rearing that had proven themselves inferior. A number of Carniolan queens were introduced, and queens bred from them. Added familiarity with the cross of the Carniolan bee with the yellow race increases my satisfaction with their valuable traits. They have proven themselves fully as desirable as either race in its purity, and they have some points of superiority.

A test was made of the claims advanced for Tunisian, or so-called "Punic" bees. During the early part of the season they exhibited no traits that would distinguish them from the native black bee, showing the same nervousness under manipulation. They build large numbers of queen-cells, and do not cap their honey with that peculiar whiteness characteristic of the common black bee. After the close of the honey season they best showed their origin and distinctive peculiarities. Whenever attempts were made to handle them they became exceedingly angry. This trait of excessive irritability seems to be their most distinctive mark. As no point of superiority was discovered, their several manifest defects make them a race not to be recommended as desirable for introduction among our American bee-keepers.

REMOVING THE QUEEN TO PREVENT SWARMING.

As the bee-keeping industry develops and new methods and devices come into use, each tending to lower the price of the product, an increased tension is placed upon the apiarist in an effort to manage large numbers of colonies to increase his annual yield. The natural tendency of bees to increase by swarming and the care and attention occasioned thereby have given rise to various plans for its prevention or control. One of the best of these plans, yet one little used, is outlined in the following, the value of which, at the suggestion of Mr. Aikin, of Loveland, Colo., I undertook to test: Early in spring two colonies were selected, as nearly alike in strength as it was possible to get them. These were kept at the same strength, the amount of brood in the hives having been equalized several times. The harvest did not open until about July 6, and upon the 8th supers were given them. July 12, queen-cells were found partly constructed in colony No. 1. The queen was removed, and four days and also eight days afterward all queen-cells were destroyed. On July 25 (thirteen days after her removal) the queen was returned. This colony did not swarm at all. The other colony (No. 2) was allowed to work without interference, and it was not until July 21 that they swarmed. As the harvest from linden was about closing, the swarm was returned and all queen-cells destroyed, in the hope that they would not attempt to swarm again before the close of the season. They did not swarm, yet it may be supposed that this interference with their instincts tended slightly to decrease their energy. The results in total amount of honey gathered are as follows: No. 1 gained in weight 37 pounds between July 6 and 25, and No. 2 gained 46 pounds during the same time.

If from the total gain of No. 2 we subtract 5 pounds as the weight of brood it contained in excess of the brood in No. 1 on July 25, we still have 4 pounds as the amount of honey gathered by No. 2 greater than the amount gathered by No. 1. These colonies were both worked for comb honey with like treatment of supers.

This experiment is valuable testimony to prove that the removal of the queen to prevent swarming does somewhat affect the amount of honey gathered by the bees. The supers showed even a larger difference in the amount of honey stored in the sections, for the reason that, where the queen is absent, the bees fill the brood-chamber with honey. When the queen is returned this will to a greater or less extent be removed to the sections. Although the interference in this manner with the economy of the hive probably always reduces the amount of honey stored, yet because of the lessening in the labor and watching necessary during the swarming season, I deem it advisable to follow this method when any similar plan seems necessary.

WAX SECRETION.

To determine the amount of honey consumed by the bees in secreting one pound of wax, this experiment, first undertaken in 1891, was repeated this year. As the conditions were much more favorable, the results were very gratifying. There was entire absence of a natural honey-flow, the weather was favorable, the colonies were of the same strength, and in prosperous condition, they took the food rapidly, and built comb readily. The result gives a less amount of honey as necessary to be fed the bees in order to have one pound of wax secreted than was obtained in this experiment last year. This was to be expected because of the more favorable and exact conditions. Two colonies were taken which I have designated as Nos. 1 and 2. No. 1 was given a virgin queen and no comb or honey. No. 2 was given a virgin queen and empty combs. It was noticed that the bees did not fly from either of these hives as vigorously as from the others of the apiary, and that No. 1 was the more quiet of the two. Twenty-four and a half pounds of food were given, and almost exactly 1 lb. of wax was secreted by No. 1. By weighing the combs both before and after being melted and taking the difference, the amount of pollen was ascertained. In both colonies the young queens had begun to lay, having been fertilized during the ten days the experiment was in progress. I now feel confident that more careful work on the part of others who have undertaken to solve this question will give practically the same results as are summarized on the next page.

PLANTING FOR HONEY.

There were in bloom at the station this season three acres of sweet clover (*Melilotus alba*) sown in June, 1891. It was sown on rather poor clay soil, yet it made a fair growth last fall and came through the winter in good condition. It began to bloom July 8, and continued in bloom until the 20th of September. The period of greatest bloom and honey secretion was from July 20 to September 1. It grew rapidly and was very rank, reaching a height of about six feet. The amount of bloom was great, and the bees were continually busy upon it; yet during the period from July 24 to August 10, while it was in full bloom and while all other natural sources were absent, no honey of any appreciable extent was gathered, and the hive upon scale lost in weight. Probably some honey was obtained during the season from this sweet clover, but in such limited quantities as to make any estimate of the value of the plant as a honey-producer impossible. At the present time the ground is covered with brush, so that labor will be necessary in clearing the land before plowing can be done.

With the idea of obtaining an opinion of the value of sweet clover as a silage plant an alcohol-barrel was filled with the cut stalks, solidly packed, and sealed air-tight. This was done on July 14, just as the clover was getting fairly into bloom, and while the stalks were yet tender and nutritious. On September 23 the barrel was opened and the ensilage was fed. A horse that had previously eaten corn silage ate it very readily, but another horse and a cow that had never eaten silage would not touch it. Several experts on the subject pronounced it excellent. There is no doubt but that it would be a very desirable plant for the purpose if the feeding value per acre could be made equal to that of corn. An estimate from the amount cut for silage gave between 6 and 7 tons per acre. Although its feeding value may be much higher than that of corn, it is still doubtful if it will pay to use it for this purpose alone, from the above estimate.

In concluding these experiments in planting for honey carried on by Prof. Cook, and now concluded for the present, I desire to say that no results have been obtained with any plant sown or planted for honey alone that will warrant the bee-keeper in expending money and labor in this direction. Bee-keepers have in the past spent much time and money in the effort to cultivate some plant for the honey the bees may obtain from its flowers. In no case coming under my observation have these efforts been a success, and the practice has never been continued at a profit. Therefore let me caution all apiarists against spending money in the attempt to cultivate at a profit any flower for honey alone. Bee-keepers should cease these useless efforts and turn their attention more persistently to extending the area of all wild honey-producing plants, and urging upon all the superiority of alsike clover and Japanese buckwheat as farm crops and the linden as a shade-tree.

EVAPORATION OF HONEY.

Nectar of flowers taken into the stomach of the bee undergoes certain chemical changes before it is finally deposited as honey in the cells of the honey-comb. The recent analyses, by direction of the United States Government chemist and those instituted at the Michigan State Experiment Station, prove that there is no chemical change made in the honey by the bee after it is deposited in the comb. There remains, however, much water in this honey that must be evaporated by the heat of the hive and the current of air through the hive caused by the fanning of the bees. It is well known that this labor of evaporation and the room occupied by this thin honey interferes greatly with the rapid gathering of nectar. In this opinion I am confirmed by a study of many records of colonies placed upon scales during the honey flow. It is often desirable to extract all of the honey gathered from one species of honey-plant before the flow from other sources begins and before the former has ripened to the usual consistency of good honey. The property of granulation in honey is so troublesome that its prevention would be very desirable. The experiments in this line have plainly indicated that the "water of crystallization" can be easily expelled by a proper artificial heat and the product sealed, so as to preserve it in a liquid state for an indefinite time. For these reasons it was thought best to experiment in this direction with various forms of artificial heat in the effort to devise some cheap and sure method to assist the bees in this work. For this purpose there were constructed a series of six shallow pans, 19 by 28 inches in size, with partitions 2 inches in height, open on alternate ends, similar to the partitions in a maple-syrup evaporator. These were arranged in a cabinet, one above the other, so that honey entering at the top was obliged to flow some 75 feet before passing out at the bottom. An oil-stove was placed beneath the whole, and a pipe at the top caused a current of heated air to pass upward over the honey. The fumes of the stove were carried off by means of a second pipe, in order to avoid all danger of their injuring the flavor of the honey. Honey of average body, with 10 per cent by weight of water added, was reduced again to the normal condition by passing twice through the pans at a temperature of 120°, and about 100 pounds per day was evaporated at that temperature. Thin nectar, extracted from the hives very soon after being gathered, was evaporated to the thickness of good honey at about the same rate. This apparatus was kept in operation about ten days upon honey of various thickness and upon clear water with the above definite results. The flavor of the first honey was injured—probably by the first acid action of the honey upon the outer coating of the tin. Afterward this was not as apparent. The color was also somewhat affected. The heat of the sun was also tried for purposes of evaporation. A shallow pan 28 by 54 inches in size was filled 3 inches deep with thin honey. This was covered with glass 6 inches above the honey, and left in the sun for four days, when about 5 per cent of moisture was evaporated. As the honey lies at rest, the water rises to the top, somewhat aiding evaporation. The flavor and color are not affected as much as by the method of running through pans. In this way honey with 30 per cent, and even 40 per cent, of water added was evaporated to the consistency of very thick honey in three weeks' time, so thick that it has not at this date showed any signs of granulation. During favorable periods of sunshine a temperature of 165° was reached. By this method a tank 4 by 6 feet, with 6 inches of honey, and weighing 1300 pounds, should be evaporated 10 per cent, or from the consistency of freshly gathered honey to that of average body, during about two weeks in July or August.

The common method of exposing to the air in open vessels in the warm upper story of a building was also tested with honey to which 10, 20, 30, and 40 per cent of water had been added. That having 40 per cent added became strongly fermented in a week's time, while only a slight change had taken place in the 30 per cent dilution, and at the end of a month it tasted like a very poor quality of commercial extracted honey or like honey-dew. The 20 per cent dilution was not nearly as bad, and the honey with only 10 per cent of water added was, during the month, returned to the consistency of very fair honey.

Nectar extracted two or three days after the combs were placed in the hives contained, during the dry weather of July and August, from 10 to 15 per cent of water above the amount always found in honey that has been sealed in the comb by the bees. This was determined by evaporating in test-tubes in hot water.

Summary.—(1) The method at present promising best results for artificial evaporation is that by solar heat under glass well ventilated. A small

Wax Secretion.

	Colony No. 1.				Colony No. 2.			
	Lbs.	*Oz.*	*Lbs.*	*Oz.*	*Lbs*	*Oz.*	*Lbs.*	*Oz.*
Weight of bees	7	5	.....	.....	7	3	.....	.....
Gross weight, Aug. 2, with bees	.....	.....	27	8	.....	.....	34	4
Gross weight, Aug. 12, with bees	.....	.....	42	10	.....	.....	56	8
Gross gain in weight 10 days	.....	.....	15	2	.....		22	4
Feed given	24	8	.....	.....	24	8	.....	.....
Minus honey extracted	12	8	.....	.....	20	8	.....	.....
Leaves honey consumed	12		.....	.....	4		.....	.....
Honey consumed by No. 1 in excess of No. 2: 12−4=8 pounds	.....	.....	.....	.....	.....	.....	.....	.....
Wax secreted by No. 1		15½	.....	.....	.....	.....	.....	.....
Pollen in combs at close	1	8	.....	.....		2	.....	.....
Honey, wax, and pollen removed (8 pounds honey consumed in secreting 15½ ounces of wax)	14	15½	.....	.....	22	8	.....	.....

portion of a greenhouse or forcing-house arranged for conserving the heat of the sun, and so located that honey could be run into the shallow vats directly from the mouth of the extractor, and drawn off from the bottom of the vats into marketing-receptacles, should give good practical results.

(2) Very thin honey or nectar will not sour as quickly as supposed by many, and may be safely kept during any period of cloudy weather we may have during the hot summer months.

(3) The method of exposing to air in a warm room can not be depended upon to ripen very thin honey, although it may be serviceable for evaporating a very small percentage of water.

(4) The method of evaporating by artificial heat of stove or furnace is expensive and troublesome, requiring constant watching and care, and not giving as good results as had been hoped for.

(5) The possibilities in the line of evaporating honey for the purpose of increasing the yield and preventing granulation are very great. A series of experiments to determine the increase in production by extracting freshly gathered honey would be next in order and value. When the utility of this method is fully demonstrated, supers with fixed frames and extractors holding whole cases will be used, and other apparatus conformable to the needs of the new system.

FEEDING BACK.

Feeding back extracted honey to secure the completion of unfinished sections at the close of the harvest is practiced by some apiarists, but with varying financial success. Extracted honey can be transported long distances with much greater safety than can comb honey. For this reason it has been thought it might be profitable to feed bees extracted honey costing 7 or 8 cents per pound to produce comb honey selling at 13 to 15 cents, locating the apiary designed for this purpose near a large city or other favorable market. With the idea of adding light upon this subject, extracted honey was fed to a number of colonies under the following conditions: The hives were contracted, and the queens kept in the brood apartment by means of excluding zinc. Five colonies were given two crates each of unfinished sections, the sections of the whole weighing 113 pounds. Three hundred and thirty-eight pounds of honey were fed these five colonies during twelve days. The honey was thinned with 12 per cent of water, and warmed before feeding. The amount of finished honey obtained was 367 pounds, or a gain of 254 pounds by feeding 338 pounds of honey. The hives were weighed both before and after the honey was fed, and a gain of 36 pounds during the feeding recorded for the five hives. The following gives the results from a financial view:

254 pounds comb honey by feeding at 14 cents	$35 56
36 pounds stored in hives, at 8 cents	2 88
	38 44
Minus value of 338 pounds fed, at 8 cents	27 04
Profit as pay for labor, etc	11 40

Two colonies were given crates of sections with full sheets of foundation, and were fed extracted honey, under the same conditions as the five colonies above:

	Pounds.
Amount of honey fed each colony	66½
Colony No. 1, finished comb honey	41½
Colony No. 1, gain in weight of hive	9
Colony No. 2, finished comb honey	38
Colony No. 2, gain in weight of hive	7½

Taking these two colonies as a basis, the following financial statement is made:

79½ pounds comb honey at 14 cents	$11 13
16½ pounds honey stored in hives, at 8 cents	1 32
	12 45
Minus value of 133 pounds honey fed, at 8 cts	10 64
	1 81

Deducting from this profit the value of the sections and foundation used, the actual profit, as pay for labor, etc., is, at most, nominal.

When this whole experiment was begun, and during the time it was in progress, no honey was gathered from the fields; but before the sealing was all accomplished, the fall honey-flow began, and for this reason the experiment was ended and the honey removed sooner than would otherwise have been advisable.

The results obtained in this work or in any experimental work of a similar character might vary under more favorable or unfavorable conditions of environment, and a continuation in various seasons and under other conditions would alone give really reliable results. The above trials are, however, very encouraging, and longer and varied work in this line is desirable.

THOSE OLD BEE-BOOKS.

ANOTHER PEEP AT THE "GOOD OLD TIMES."

James Bonner's treatise on bees was printed in Edinburgh in 1795. The book has no particular title other than "Plan for Increasing the Number of Bee-hives." Mr. Bonner was also the author of a work on "Warping;" but just what was "warped" does not appear—possibly a political speech or a sermon. The author's name is well known to all persons who have read much about the history of apiculture. His brief account of himself is full of interest. He had from the first a deep interest in bees, and he considers these especial bents of mind as gifts from God. His father was a devoted bee-keeper—devoted to the feeding of twelve children—and boasted that, in good seasons, he made as much money by his bees as nearly purchased oatmeal enough for the family for a year. He purchased a large quarto Bible with the wax produced in one year.* A Scotchman and a quarto Bible are as much to be expected to complement each other as the two blades of shears. Who can fail to notice the connection between that nation of Bible students and the virtue, independence, and intelligence of the Scotch? The elder Bonner was a weaver, and followed his trade till within a few days of his death, which occurred when he was 86. Probably that weaving accounts for the "warping" I have referred to.

Our author says that he himself was so much interested in bees that, when he was 20 years of age, he went to London to converse with Mr. Wildman, the author of the book which I reviewed in the previous issue; but Mr. Wildman had gone to France, and so Mr. Bonner contented himself with purchasing every book he could find relating to bees, and, strange enough, he mentions every book I have so far reviewed. During the honey season he was so intent on the work of the bees that he hardly allowed himself to sleep for weeks together. He speaks of "the infinite number of mellifluous flowers" in his land. How many of the readers of these pages ever realized that Edinburgh is as far north as parts of Alaska, our arctic possessions, and that all of Scotland is east of Hudson's Bay? The idea of flowers in such a latitude as that seems strange; but as the land is so deeply indented all around by the ocean it is rendered a very good place for bees.

The year 1794 was memorable in Scotland for its remarkable flow of honey, and this led Mr. Bonner to believe that, if the number of bees in Scotland had been increased twenty or even fifty fold, all would have done well. So much carried away was our author with the idea of possible increase in bees that it reminds one of P. Benson's remarks on the increase of swarms and apples, as seen on p. 386, GLEANINGS, 1887. Mr. Bonner says: "Were there but one hive in all Scotland, in a cold rainy summer, even that hive would produce but a very small increase, perhaps swarm only once, and that swarm produce only one pint of honey; whereas if there

* It should be remembered that Bibles, as well as books in general, were much more expensive in 1790 than now.

are 100 hives, granting the weather to be equally bad, the produce must be at least 100 pints. Estimating the number of parishes in Scotland, capable of raising bees, to be only 800, the following calculation will give a view of the immense quantity of honey that might be produced in ordinary years: Suppose 1 hive to produce 4 pints of honey, 1 hive in a parish, 800, produces 3200 pints; suppose the number in each parish is increased to 30, the 24,000 will produce 96,000 pints; but suppose (which is still moderate) the number in each parish is further increased to 100, the 80,000 will produce 320,000 pints; and 400 in each parish would produce 1,280,000 pints of honey; and 1 lb. of wax to each colony would be 80,000 lbs."

Mr. Bonner says that his own parish, in 1794, would have supported 1500 colonies abundantly. He claims that all of Scotland could produce two million pints of honey, a pint being about a pound, besides 80,000 lbs. of wax. I am confident that Scotland can do better than that to-day. Can we have any statistics from there? Some counties in California, if I mistake not, do more than that.

While Mr. Bonner does not seem to think it would pay to plant or sow for honey alone, he shows the advantage of raising some things for the honey they produce besides food of other kinds; and his views are sound, and as applicable to this country as to Scotland. He says: "Should we plant some trees, with a view to assist bees, we have their wood; if we rear turnips, we have their feed; if we sow white clover, we have the best of pasture; and if we allow furze or broom to overspread waste ground, we can be at little loss, as even these have also their uses by supplying us with hedging, fuel, shelter for sheep, etc. I wish not to be here understood as if I meant to recommend the sowing of large fields purposely with food for bees, excepting white clover, which provides food for larger animals."

One of the advantages of cheap honey, Mr. B. assumes, would be the manufacture of mead, to take the place of ale and porter. Further, "A weaker kind of mead, called bragwort, could also be made of it. This is an agreeable wholesome liquor, much esteemed by many who use it as a substitute for small beer. When properly made it will keep long; and when of a proper degree of strength it is so highly exhilarating that many persons have been sent home half intoxicated with it."

The latter part of that quotation, "sent home half intoxicated," is a good reply to those who would substitute the light wines of California for some of the heavier drinks. The Spanish have a proverb which says, "As well eat the Devil as the broth he's boiled in;" that is, the essential spirit of all sins is the same. Whether the persons who were only "half intoxicated with it" were "sent home" on foot or on a shutter carried by friends, I can not learn.

Mr. Bonner is confident that 32,000 colonies could be doubled for six years in the United Kingdom, making 2,048,000 in all; but as the United States probably has not as many colonies as that, Mr. B.'s estimate seems too large. Nature has a delightful way of keeping things to an ordinary level. Mr. B. was so desirous of increasing the bees in Scotland that he regrets he has not $5000 in cash to get a shipload of them from Dantzic, in Germany. He says he would rather take them 4000 miles by ship than 100 by land; but that was before railroads were built.

In speaking of the process by which bees rear a queen from a worker egg by floating it in royal jelly, Mr. Bonner treats the matter in such a way as to make it intensely interesting; but he seems to conclude from this, following Schirach, that bees are quite independent of drones so far as brood is concerned. All through the ages there has been a disposition to throw a club at the drone simply because it does not and can not gather honey—as if life consists entirely of something to eat. Where nature always provides something, we may conclude that its absence would render the chain useless.

In the matter of candying, Mr. Bonner says that honey in even the same hive varies greatly, some candying immediately and others remaining liquid till December. The latter kinds have a slightly greenish tinge.

No reference to Huber is made in this book. This seems a little strange when we consider the fact that the fame of the blind Genevan had already gone around the world.

One of the most delightful things about these old books is the frequent glimpse one gets of life among what Abraham Lincoln called "the plain people." Now we find ourselves in the quaint kitchen beside the blazing hearth, melting wax; anon we are in the garden or flowery meadows, or on the rugged crag. With such books the past is still present, and old Father Time stops by the roadside while we read.

Medina, Sept. 23. W. P. Root.

E. FRANCE'S REPORT.

INDIFFERENT WINTERING, BUT NEARLY TWENTY TONS OF EXTRACTED HONEY.

Such is the subject of an article which may be found in Gleanings for May 15, 1893, pages 388 and 389. At the close of that article, April 20, we were in the midst of a snowstorm. Now, I propose to give a report from that time on until the present. At that time I was in hopes of saving 400 colonies; but we dwindled down to 323 with queens, and about 20 queenless. Most of the queenless ones we built up into good colonies; but we had to draw so heavily from those having queens that it would have been better if we had thrown the queenless ones away.

We moved all the bees from the Whig yard, to fill up vacancies in the Adkinson and Gunlauch yards, so now we have 6 yards instead of 7. Now, why did we have so much loss in the spring? You will see by my spring report, that, on April 20, we had snow and cold weather. At that time the queens all stopped laying; and, do all we could, we could not get those queens to laying again for three weeks; and the consequence was, when the clover commenced to bloom, all the bees were weak—few bees in a hive, and many of the hives with no live bees in them at all. We had a hard fight with fate to save as many as we did. We fed sugar syrup freely. If the syrup was put into feeders right over the bees, they would take it down; but there was no vim nor ambition about them. We tried to get the bees to work on the combs of the dead ones. No, they would not do it; open up the hives, set the combs out, there they would stand, with very few bees about them. When the dandelions opened out, then the bees woke up, and the queens went to laying rapidly. The bees spread out to cover the brood; and as the weather was warm they increased fast. Dandelion blossoms were very plentiful—the most I ever saw. We took brood from the strong to give the weak, so as to save as many queens as possible.

White clover commenced to bloom about the first of June; but the bees did not work on it until about the 18th of June. We commenced to extract June 19th. At that time the bees had picked up considerable dandelion honey; and as for losses of colonies, we were out on

solid ground, and could now count up the stock and see how many we had. Queenless ones we did not count, as the other colonies had to furnish bees for them until they could get a queen —in fact, until their own brood was hatching.

White clover this year was the best I ever saw. Pasture fields looked as white as a field of buckwheat. There was so much of it that the bees very nearly all worked within one mile of home; and our honey this year is the best grade we ever had, taking the crop all through.

Yard.	Col's in spring.	Date, June.	Amount first extracting	Date, June.	Amount, 2d extracting.	Date, July.	Amount, 3d extracting.	Date, July.	Amount, 4th extracting.	Date, July.	Amount, 5th extracting.	Totals for each yard.
Klebenstine	33	19	895	26	737	1	663	8	975	17	224	3494
Watters	52	20	1314	27	1500	3	1628	10	1840	18	710	6992
Gundauch	47	21	1123	28	1494	5	1528	11	1460	19	770	6375
Cravin	55	22	1029	29	1471	6	1678	12	1420	20	600	6189
Adkinson	56	23	1330	30	1600	7	1710	13	750			5390
Home	80		1755		3700		4080		1180		195	10910
Total	323		7437		10502		11287		7625		2499	39150

Drainings from cappings, etc., made 500 lbs., or a total extracted of 39,650 lbs. Besides the extracted honey, I am taking off third stories from the home yard; honey in the brood-combs, at least 3000 lbs., which we will keep for spring feeding, if we should want it. All the bees have plenty of honey for winter.

You will see that we commenced to extract the 19th of June, and quit the 20th of July; in fact, we extracted but very little after the 12th of July, except in the home yard. My son Newel had a set of hands. They worked the out-yards, and I had one boy with me and worked the home bees. There were two or three times that Newel and his help were home in time to help me with the home bees. One day they helped me two hours, and we extracted 1400 lbs. in that time. We did it with a two-frame non-reversible extractor. One hand did all the extracting. That was during the third extracting. The dates of extracting in the home yard are not given. I extracted more or less every working day while the season lasted.

White clover was unusually good; but the basswood did not amount to much; and since the basswood, there has been nothing for the bees to work on. Every thing is dried up. We have had only two little showers since we commenced to extract. It is now just four weeks to-day (Sept. 12) since we had any rain, and not much then. The white clover is badly killed out. It doesn't look as if we could get much honey next year. We did not increase our stock of bees very much. You see they were weak when we commenced, and the honey came in so rapidly that the bees kept the combs full of honey, leaving the queens a poor show to raise brood. However, we got a good working force all round, and got a few new colonies.

HOW FRANCE MANAGES THE MOTH-WORM.

We had all the empty combs we could use, to make new colonies and tier up on our L. hives at home. We have several hundred empty combs on hand now in our storeroom. They will be good for another year. We find empty combs are a great help. They are as good as cash in the bank. We had combs from 260 colonies that died last winter and spring—most of them in the spring. Some of them got wormy before I could get them into the storeroom. Those, I had to melt up. But all that I got into the storeroom are free from worms now. Our storeroom for combs is 10 feet square, 8 feet high, lathed and plastered; one door and one window. There is a cellar under it. Down cellar I have a sheet-iron stove with a four-inch pipe from the stove up through the floor into the room above. When I got the room about a third full I found that some of the combs were getting a few very small worms in them. I shut the door and burned half a pound of sulphur in the stove below. That ended all the worms. Then I kept filling in until the room was full of combs; then I smoked them again—burned a pound of sulphur. We used out about half of the combs. About the time we quit extracting I found the comb-room door open one morning, and there was a bee-moth on the window. I killed it and shut the door. After that I saw that the door was shut all the time except when it was opened to look in. I made it a point to look in every day. One morning when I looked in I found about 30 millers about the windows—great fat fellows. I killed all of them by dropping them into a pail of water, and then I set them out for the chickens. I was so busy that I did not smoke the room that day. The next morning there were more millers about the window than the day before. I just shut the door and let them alone, but went down cellar with one pound of sulphur—put it into the stove, and set it on fire, then went up and looked in the window. There they were, trying to get out—about 50 of them. They had a lively time of it for about five minutes, then they dropped down on the window-sill and floor, and there they are now—not so lively. The next day I found a bunch of combs, about 10 of them, all webbed together, full of cocoons and big worms, all dead. I took the bunch out of the comb-room, and put them into the shop. There they are now. It is now about three weeks since I smoked the room, and so far I don't find any worms or signs of them; but I shall smoke the room again in a day or two, for possibly some of those millers' eggs may hatch and make trouble. I have been putting in about 400 combs of honey, taken out of the third stories in the home yard. They may contain a few worms. I will give them a smoke, and make sure of them. But I have been in the habit of putting in combs in the fall every year for several years, and have not smoked them, and never had worms in them. But I am getting them in this year about two weeks earlier, and this hot weather I am a little afraid of them; so I will smoke them this year.

E. FRANCE

Platteville, Wis., Sept. 12.

CLOSE SPACING.

GETTING RID OF BURR AND BRACE COMBS BY WIDER TOP-BARS.

A correspondent writes: "After seeing what you say about space in Stray Straws, Aug. 15, I took the Hoffman frames out of a Dovetail hive and put in their place nine thick-top frames, and it seems to work like a charm. We winter here on summer stands, and seldom move the hive, hence I am disposed to do away with the division-board in order to have as much comb as possible, with a view to large swarms. Now, how do you think the nine frames will work? Would it be safe?

In the straw referred to I raised the question whether it would not be well to have only one-fourth inch between top-bars; but in that I had no thought of changing the distance of combs from center to center. More fully expressed my idea was, "Why not make the top-bar an eighth of an inch wider, so as to make the space between top-bars ¼ instead of ⅜ of an inch?" As my correspondent lives in Tennessee, there may be a difference between his

place and mine; but I should advise him to experiment on a somewhat small scale before settling on nine frames in an eight-frame Dovetail hive.

It is true, that the difference as to distance from center to center is not very great; but I am afraid that little difference is on the wrong side. Let us figure a little. The inside width of the hive is 12⅛ inches. Divide that up for the 9 frames and 10 spaces, and you will find your 9 frames about 1.32 inches from center to center—only about $\frac{3}{64}$ of an inch closer than the 1⅜ with the 8 frames—less difference than one would suppose: but then, you must remember that we have gained about an inch of space by throwing out the dummy. Without knowing any thing positive about it, I suspect that there is hardly any gain in spacing closer than 1⅜, and it is possible that there may be some loss.

By throwing out the dummy, and letting the frames occupy all the space, you are obliged to give up fixed distances; for you couldn't get out a frame with nine at fixed distances, and must rely on crowding together to get the first frame out.

With nine frames you might do better, but I suspect the nine frames would better have full room, and I would have a larger hive for them.

SPACE BETWEEN TOP-BARS.

Now some words as to the real idea that was in that straw. The matter of getting rid of the sticky, dauby nuisance of burr and brace combs is one of very great importance—at least, it is with me. I can't say how it may be with others, but in my experience I am satisfied that a good many more bees are killed with brace-combs than with close-fitting Hoffman frames, shoulders and all—that is, before any brace-combs are built in the Hoffmans.

But I am obliged to say that, with the Hoffmans as sent out, there are too many brace-combs. So I have been doing some experimenting. One strong colony had frames with top-bars ⅞ thick, and a space of ⅜ between them. In this there were no brace-combs to speak of. But there may be a difference in colonies, and I think I have seen top-bars of the same thickness with occasional brace-combs.

Knowing that bees when left to themselves build out their combs of honey so as to leave a space of about a quarter of an inch between two surfaces of comb, I could see no reason why they should want any larger space between top-bars, and it seemed to me that a wider space than necessary was only inviting brace-combs. I had a number of frames with top-bars ⅞ thick and an inch wide. These, when spaced 1⅜ from center to center, left a space of ⅜ between the top-bars. In order to reduce this space I nailed on the side of each top-bar a strip ⅛ in thickness. The strips I had for this purpose measured $\frac{9}{16}$ in width, so that, when the frames were spaced 1⅜ from center to center, the space between top-bars was ¼ of an inch for the upper $\frac{5}{16}$, and ⅜ for the lower $\frac{5}{16}$. I did not think this so well as to have a uniform space of ¼ inch; but I happened to have just those strips, and for experimental purposes it turned out all the better.

In order to have theexperiment as general as possible I distributed these frames in a number of hives, putting two frames in a place, the remaining frames in the hives being loose hanging frames with ⅜ top-bars. The result was the same in each hive. The spaces between the old and new frames were promptly filled with a plentiful supply of brace-combs—of course, that was to be expected; but the space between the new top-bars showed in no case a brace-comb. Lifting out the combs, however, I found that, in most cases, the bees had built more or less comb below the added strip. That is, in the lower $\frac{5}{16}$, where the space between top-bars was ⅜, the bees had built more or less comb directly on that part of the top-bar where the strip was deficient. One might have supposed that they would have built brace-combs from one top-bar to the other, but they didn't. They merely put on a thickness of ⅛ inch, leaving ¼ inch space clear.

I would rather have waited another year before giving the result of my experiment, and do not now give it as any thing positively conclusive; but as it is an important matter I should be glad to have others experiment and report. It is just possible that, with longer time and under other circumstances, the bees may conclude to fill up with wax or propolis that ¼ space. Yet the question comes back, Why should they, if that's the space they leave of their own accord? So I hope others will experiment and report. C. C. Miller.

Marengo, Ill.

[We should like to have a report from others in regard to the brace-comb question; and when we say "brace-combs" we mean those bits built *between* the top-bars. When we speak of *burr*-combs we mean those built between top-bars and cover or super. Now, we can widen the top-bars, as Dr. Miller suggests; but it narrows up still more the projections of the top end of the end-bars, so that there may be danger of their splitting off. These projections, or forks, as it were, are narrow enough already. Before the end of this year we hope there will be enough reports in so that we can decide intelligently.]

FIGS.

LITTLE OR NO HONEY FROM THOSE RAISED IN CALIFORNIA.

Editors Gleanings:—I have found the issue of Gleanings for the 15th of August a very interesting number. After reading it I am constrained to supplement some of the articles I saw therein, with the following observations:

The article "Do bees gather syrup from figs?" reminds me of that passage in the Bible where it says something about our not being able to gather figs from thistles. But as I can not draw any lesson between the two quotations, I will content myself by saying that here in California we grow the finest figs in the world. We have had them on our place for years. The trees grow very luxuriantly. We are opposite the Golden Gate—about some twelve miles from that strip of water which connects the finest harbor in the world with the great Pacific Ocean. The figs produce two crops of fruit a year. The first is now ripening; in fact, they have been gradually coming in for the past three weeks, and one crop will run into the other, so that we shall have ripe figs almost up to Christmas, if early frosts do not set in before that time.

Though several varieties are cultivated all through the State we have but one kind, and that is the black sort. These figs are large and luscious. When fully ripe they are the nicest fruit that I know of. It was only a few days ago that I learned of a new way of eating them. Heretofore the strawberry was my favorite fruit. I have changed my "taste" since; in fact, I think Isaak Walton, had he only lived at this time, and could sit down and eat figs in the way I am about to tell of, would, in all probability, move to amend that saying he made about the strawberry being the best of fruits. What I was going to say about eat-

ing figs to perfection is this: Select fine, ripe fruit; remove the skin; place on a saucer or dish, and cover with fresh cream. When eaten in this way there can be no richer or pleasanter dish served. It is said that the Japanese persimmon is called the "fruit of the gods;" but I am inclined to think that, if the Japs had learned to eat figs and cream they would never have raised the insipid persimmon to the exalted place they have otherwise seen fit to give it.

The fig is the easiest tree that we can grow, outside of the willow; in fact, it is as easy to propagate as the willow. All one has to do to get a fig-tree is to take a twig off a fig-tree and stick the end in the ground as he would a willow cutting, and it will spring up into a large tree almost before he has time to get his wits together. Right here I will tell a little story about the fig-tree in this State.

This tree, as well as a number of other fruit-trees that have made California famous horticulturally, was introduced here a century and more ago by the Franciscan friars, who founded 21 missions from San Diego to a point 50 miles north of San Francisco, for the conversion and civilization of the Indians. One day a party of Spaniards were traveling from one of these missions to a distant place in California. Before one of these men set out he cut a stick from a fig-tree to use as a whip to urge his *bronco* along faster. As the beast began to jog along nicely after a while without the aid of the rod, the rider got down from the animal's back and stuck the end of the fig-shoot into the soft earth, that it might become a tree. But he was greatly surprised, when he returned a few months later, to find that its growth had more than exceeded his expectations. He hoped to see a tree four or five feet high; but when he found that his whip was now a tree that could shelter himself and his beast, and he on the latter's back, he was thoroughly astonished. It was one of the wonders of the new land which, not a great many years later, were proclaimed the world over.

The Old Mission figs have given place to the newer and better varieties from Europe and Asia. Thousands of acres of figs are planted in some counties of this State. They are sent to market in their ripe state, they being sent to the Eastern States during the past few years. Then the greater portion of the crop is dried. Some of these are put up in nice boxes so as to tempt the lover of dried figs; then some, and, I think, the greater part of the product of our fig-orchards, is sacked and sent to market. To my liking, this is not an inviting way to place them before customers. Figs in this shape are apt to become wormy. Then, of late years, the fruit is made into confections; and, again, it is used to a large extent, I have heard, for making medical preparations.

But it was the relation of this fruit to the bees that caused me to begin these lines. Though we have had figs on our place for a score of years, I never saw a bee at work upon the ripe fruit. There is always more or less broken fruit on the trees, as the birds are very fond of figs; and if they are not gathered as soon as they show signs of ripening, the birds will begin to depredate upon them. Then, when they get fully ripe, the skin breaks, thereby giving the bees plenty of opportunity to feast upon the juice of the fruit. Still, I have not the least doubt that where bees are short of food they will go to the ripe figs and gather the rich syrup.

In the city of Sacramento, this State, where this tree is growing in many streets as a sidewalk-tree, one may see the sidewalk all covered with the ripe fruit in the fall. In walking along some of the streets of the capital city, a person has to be careful where he steps; for, if he should place his foot on a ripe fig, his fall will be as sure and swift as if he had trodden upon a banana-peel. At both Sacramento and Stockton, the latter city being some fifty miles south of the former, and in the great San Joaquin Valley, while the other is in the celebrated Sacramento Valley, the fruit is never gathered for the market. It is simply left for whoever wishes to help himself. I suppose this is mainly owing to the fact that the fruit is of the common variety, and also because there is so much of it that, if it were put on the fruit-stalls, no one would purchase it, as there is so much to be had everywhere in the city.

Last year, while visiting the great wine and raisin vineyards in the vicinity of Fresno, 207 miles south of San Francisco, in the San Joaquin Valley, I saw some fig-orchards of the white variety, which must have covered several hundred acres. This section is the greatest in the world for drying fruit. Every thing is dried by the sun in the open air. Here is located the largest raisin vineyard in the world. It is over 600 acres in extent.

There is one more thing that I should have said about the fig, and that is this: They make the nicest preserves that one could well wish to eat. At our house we have them prepared in pretty much the same way that peaches are put up in sweet pickle. I have never seen them anywhere where I have been, in this way. It seems to me that, if housekeepers and, in fact, canning companies, knew how to put them up in this way they would do so, for there is no finer and more palatable dessert than pickled figs. W. A. PRYAL.

North Temescal, Cal., Aug. 28.

Concluded next issue.

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

HOW TO CLEAN PROPOLIS FROM SECTIONS; J. E. CRANE'S WAY.

The best way to remove it from boxes, to my mind, is to first keep it in a hot room and let it ripen with the honey; then with a sharp knife in the right hand, made of the best stuff, and holding the section in the left hand, you can clean faster than with any thing to lay the section on. A good worker can clean 1000 sections a day. J. E. CRANE.

Middlebury, Vt., Sept. 12.

HASTY'S STATISTICS VERIFIED.

I never saw so many queens as this year from a second swarm. I shut the entrance of one hive with queen-excluding zinc, and I removed it a week after, and I found 7 dead queens behind it. Some hatched as late as the 17th day from the issuing of the first swarm. My experience is the same as E. E. Hasty's. I have had a good many swarms issue 14 days after the first one.

I tried one Langdon non-swarming device; bees swarmed in two hours after I turned them into the other hive; then after 7 days I shut them up again 7 days to prevent a second swarm, and they became queenless. The others swarmed one morning at 6 o'clock.

Columbus, Wis. SUPER LIFTER.

SECOND SWARMS ON THE EIGHTH DAY.

I see that G. M. Doolittle handles his second swarms on the same principle that I do, only I let my second swarm come out and cluster, then cut out the queen-cells, and then run them

back. I have not had them swarm again the same season. I have practiced this plan for three years, also for others. I always look for second swarms on the eighth day, weather permitting. I have had them swarm on the seventh, never after the fifteenth day.

Lisbon, Me., Sept. 11. BENJ. MERRILL.

SCRAPING SECTIONS; USING FANNING-MILL SCREENS.

You ask for a device on which to scrape sections. I arrange a rather long low table, just high enough to clear my lap when seated at it in a chair. For a rest for sections I use a couple of fanning-mill sieves with half or three-fourths inch mesh. On one sieve at my left I turn the case of sections upside down and slip the case off, and they are easily separated. On the other sieve I rest sections and scrape them. I think it pays me well to save the separators if they are not too much eaten away. I scrape them only where they come in contact with the sections. The bees are not nearly so apt to build brace-combs to the glazed surface of an old separator as to a clean new one. They are also less inclined to curl, and are cheaper than new. W. C. SIMONS.

Arlington, Pa., Sept. 4.

THE LANGDON DEVICE NOT A NON-SWARMER, BUT A SWARMER; IN THE ROLE OF THE LATTER, A SUCCESS.

Friend Root:—You call for reports with regard to the Langdon non-swarmer. I have used it this season, and with me it has proved a success. I think, however, that it does interfere with brood-rearing. It was predicted last spring that this device would bring about great changes in the apiary, and I think it will. But in my opinion its real value lies in its being used as a *swarmer* and not as a non-swarmer. Next year I expect to use it for that purpose. When a colony begins to look like swarming I will set an empty hive by their side, into which I will place a few frames from the colony, including the queen, and then put on the device and send the field bees into the new hive. Then I will remove the device, set the new hive on the old stand, and give the old colony a queen or a queen-cell, if they need it. I think the above plan will work, for this year's experience has proved that field bees can be run into another hive. C. H. SHERWOOD.

Newton, N. J., Sept. 12.

HOW TO MAKE A MODIFICATION OF THE PORTER BEE-ESCAPE.

After reading the article in the Aug. 15th GLEANINGS, page 648, on bee-escapes, the idea struck me that I could improve on our English cousin's method. I took a ¾-inch board, 16x21 inches, and with a 1½-inch auger I bored half way through from the under side, finishing with an inch auger. I then cut a channel, as described in GLEANINGS, but cutting on one side of the hole. The channel is ⅜ inch wide and one inch long, cut sloping. The wire screen was cut a little longer than the hole, say 2½ inches long, and then the wire was unraveled for half an inch on one end, leaving the points of wire half an inch long. These were all bent back except the four center wires which fit in the channel and allow the bees to pass under, but do not allow them to return. I have three of those boards at work in my apiary, along with the Porter escapes, and they do the work fully as well. The boards that I use have two holes, or escapes, but I think that one hole would do the work as well as a Porter escape. Make one and try it, and see how cheap an escape can be made. It costs practically nothing.

Our honey crop is poor this year. The drouth spoiled it. W. S. FULTZ.

Muscatine, Iowa, Aug. 31.

There is a general complaint of dull times. All farm products are ruinously cheap; and, though our honey is also cheap, the bee-men are about as well off, and I think a little better, than the producers in other industries.

Redlands, Cal., Aug. 4. RAMBLER.

FAITH IN GOD CONTRASTED WITH UNBELIEF.

Since the time when I thought best to permit some of the friends to express in GLEANINGS their unbelief, there has been a sort of ringing in my ears and a hungering in my heart, that these poor mistaken brothers might see how awfully cruel it is to take the stand they do in their antagonism to the gospel as revealed in the Bible. Just now a little Christian tract comes floating through the mails into my hands. As I looked it over and caught the inspiration from the pure loving spirit it unfolds, I wondered, "Will not this little story touch some heart, and lead it out of the darkness of unbelief into the light of faith in God?"

THE CAMP MISSION.

Let us glance at a typical lumber-camp. Through a lumber-road in a deep forest we come to three long, narrow shanties of logs—one for horses, mules, and oxen, and the other two for men; the sleeping-building filled with hard bunks; the dining-building having a long table set with tin dishes, piled with coarse food. A blast from a tin horn brings from twenty-five to one hundred men in heavy mackinaw or toboggan suits. The men are known as "shanty boys," and some are only boys in years, while some old loggers have spent nearly all the winters of their life in camp; but the majority are strong young men in their prime, mostly rough hard fellows from everywhere, of nearly all nationalities. Some whole camps are French, German, or Norwegian, but usually they are a mixed lot, representing sometimes half a dozen countries.

This great army of woodsmen, equipped with axes and saws, and stationed here and there throughout the great forests, are numbered by the hundred thousand. They fell the timber for the churches of the land, but are banished by their work far beyond the sound of church-bells. They provide the material for the homes of the nation, but are themselves outside of home comforts and saving influence, only as they are reached by camp evangelists. No congregations receive gospel messengers more gladly. No camp-meetings in the world have such results as these winter camp-meetings, where swearing men have become praying men; where gospel hymns have taken the place of vilest songs. Almost every camp has good singers. A hymn has brought up old memories, leading to lasting good. Whole camps have been changed. One Sabbath a camp-meeting was held where the Sabbath before there had been a drunken carousal, and men had been chased out of the camp by drunken companions with axes. Strangely, murder had not been the result, and one week brought a great change. Oh if we only could reach more of the multitude of camps! e have been able to send out only a few of the many evangelists needed for this gospel work in the forest. Yet, as the result, hundreds of lumbermen have been brought to God, and there has been untold good that we can never know until the recording angel unfolds the eternal history.

In a work like this, shall we lack money? Only 5 cents will buy a New Testament, and 3 cents a gospel song book with a hundred familiar hymns; and only 1 cent will buy twenty gospel cards, all of which have been blessed in the saving of souls. It is strange how easily rough hearts are sometimes reached. Testaments are read in camps sometimes by hardened men who would not look at the little book at home. A gospel hymn rings through a camp, and is caught up by other voices and awakens tender chords, recalling holy memories that seemed buried for ever A gospel card or tract is slipped into the pocket, and read some lonely hour to call a homesick soul to God and heaven.

How far this gospel work shall reach into the

dark pineries and into the lives of hardened men depends on the amount of help received. Showers of fragment dimes and nickels and pennies would bring "showers of blessings."

Can you help our winter camp-meetings?

In his name,

EMMA C. NASON.

Blodgett Mills, N. Y.

Chairman of the Lumbermen's and Miners' Mission of the King's Daughters and Sons.

REPORTS ENCOURAGING.

I can report 22,000 lbs. of extracted honey from my 110 colonies the past season.

Riverside, Cal., Aug. 19. H. E. WILDER.

The honey crop in this section is the largest we have had in some years—white clover mostly. My 45 colonies gave 1500 lbs. comb honey, 500 lbs. extracted. It is dry now, and they are at a standstill. CHESTER BELDING.

Middletown, N. Y., Aug. 12.

I see in GLEANINGS some very bad reports from our State, so I will report my success, which I think is good. I had 13 colonies, spring count, and got 764 lbs. of comb honey (white clover and alsike), mostly in 1-lb. sections. I increased to 27 colonies, and went through the hives 8 days after swarming, and cut out queen-cells, but got an after-swarm from one hive, as I must have missed a queen-cell in it. Bees rested through August, but have been doing a land-office business on smartweed, that grows on low land. All my honey last year was from smartweed, and I got 47 lbs. per colony surplus from that source. I use the 8-frame Dovetailed hive. J. W. COOK.

Poneto, Ind., Sept. 13.

OURSELVES AND OUR NEIGHBORS.

Charity vaunteth not itself; is not puffed up; doth not behave itself unseemly.—I. COR. 13:4, 5.

In order to explain what brought the subject of my talk to-day vividly before my mind, I wish to say that our good friend Terry, in replying to many of the letters he gets, is in the habit of copying portions of them into the *Practical Farmer*. In the issue for Sept. 16 he writes as follows:

Only one sentence in friend Austin's letter troubles me. He says: "Mr. Terry, in a late article in the *P. F.*, does not give the name of the farmer who wrote him about potato-bugs, very considerately, thinking he had just laid him out." May God take away the strength from my right hand when I use my experience with the pen to simply "lay out" a brother-farmer whose practices are different from mine; and may he help me to always try to show friends in a simple and kindly way how it seems to me they can improve.

Now, I do not know that, among all of friend Terry's utterances, there is any thing that has pleased me so much as the point made in the above. In newspaper controversy (and we have a good deal of it) it has long been a custom for the readers to take sides with different prominent writers, and to set them on, by counsel and encouragement, as it were, in order that they may get the upper hand, or demolish one another. The strife or contest seems to be like a couple of boys wrestling. Each bends all his energies to get the other down under, while he keeps above him. In a newspaper contest the aim of each party seems to be to show how smart he is, how much experience he has had, what great crops he has grown, and how able a teacher he may be compared with the other. Then the friends on either side will send in encouraging epistles of congratulations—"Didn't you lay him out most beautifully?" etc. The matter has been brought prominently before my mind in my recent replies to friend Dadant. Several would say, "Brother Root, you can not tell how much it pleased us to have you lay out Dadant so beautifully." Now please notice that some of the friends on the other side have said, at just about the same time, "Brother Root, I rather think that Dadant laid *you* out pretty well in your discussion. Why, you didn't even answer him at all." Perhaps they meant these communications as kind and friendly, but yet they gave me pain. I surely did not want to "lay out" friend Dadant, and I do not think he wanted to lay me out; yet in spite of our good intentions the thing got quite a start in the way of laying each other out. I judge so because of the great number of communications that came in on both sides, and by the urgent requests that are made to have me publish more on the subject. I am sure, however, it is not best. I have seen this thing go on and on through different periodicals for months, and it has always grown worse. The good editor several times protested and urged both parties to give up, but they persisted so strongly on having just one more reply, to make it even on both sides, or to set themselves right before the public, that the editor would reluctantly give way, hoping there would be a better time to stop it further on. But the better time never came. If permitted to go on, all rules of courtesy were soon violated, hard words came out, and personal and private matters were pretty soon pushed out before the world in a way that must be painful to every one who had not become ensnared in the strife. Our text tells us that true Christian charity, or love, "vaunteth not itself" (the margin says, "or is not rash"); "is not puffed up; doth not behave itself unseemly;" that is, if we have the rule of love in our hearts for our fellow-men (or, what amounts to the same thing, the spirit shown by Christ Jesus when he was here on earth), we shall not want to get *above* anybody nor *ahead* of him; we shall not *want* the best of the bargain; we shall not even wish to have the world know how smart we are; and we *surely* shall have no desire to become *millionaires* at the expense of keeping thousands in poverty.

I suppose likely friend Terry reads these Home Papers of mine—at least, a good part of them. Now, I wish he would stop reading right here, and skip on, say, till the next page. I say this because I am afraid that what I have to say will give him pain. I do not believe that his wife and children will particularly object to what I say, and so they can read on; but even at the risk of giving him pain I want to speak of and comment upon the spirit he has shown—at least in the greater part of his newspaper writings. Friend Terry is just now one of the brightest and most able agricultural writers we have in the world. His articles are picked out and read first; his books are having a run that few books of a similar character have ever had. And now perhaps I am saying something that I hardly ought to say, for we are the publishers of all his books but one. There are thousands of writers for the agricultural papers who would give almost any thing if they could write like friend Terry, or in as able and helpful a way as he does. What is the secret of it? Why, it seems to me the great secret lies in the fact that what he says in that newspaper extract I have made is literally true. He has no desire in his heart to

"lay out" or silence any other newspaper writer or any other brother-farmer. He has at times been abused and misused; he has been *shamefully* treated, not only in print but in public. I was present at one farmers' institute where he was sent for, and where they paid him for coming and teaching; but even there this disposition I speak of came up so strongly that he was publicly insulted, almost at the outstart. I do not know that they intended it as such, but there had been a great deal of outside talk and fault-finding. A good many indulged in saying that they did not believe he had ever done what he claimed; and in his first talk, or, rather, answers to questions, he did not take time enough to make full explanations, therefore somebody thought he saw a place to get even Terry himself into a corner, or, in other words, to catch him in an untruth; and, even though our friend was an invited guest, this critic did not hesitate publicly to accuse him of misstatements. Now, friend Terry has abundance of opportunities to retaliate. He is a strong man physically, mentally, and morally. He could, if he chose, "lay out" the biggest part of us in a physical contest, or in a contest with intellect; and perhaps if we were boasting of our *good clean lives*, he might, if he chose, show a better record than most of us there. Yet I have never seen him take any advantage of this sort. His honest desire seems to be to help everybody up a little higher, and never, by any means, push anybody down or hurt his feelings.

I do not know where this expression "lay out" came from. In our prizefighting (oh how it pains me to say *our* prizefighting!) I believe the contestants do their utmost to lay each other out if they can. I have never witnessed such a sight, and I am quite certain I never shall, and so perhaps I am wrong; but my impression is, that, when one can deal the other such a blow that he lies stunned and still, he is said to be "laid out." I do not know what the crowd does on such occasions. Perhaps they cheer the victor, and gather round him to shake hands because God happened to give him more muscle and skill than he gave to the other fellow who lies helpless and still. Now, in newspaper controversies where one writer can so effectually use up the other that he quits writing, and does not appear any more in print, I suppose he may be said to be "laid out;" or if his opponent can go away back and rake up some disgraceful episode in the other's life, they lay him out in that way; and then the crowd or the readers laugh and shake hands over it. Is this Christianlike? Is it even gentlemanly? Sometimes we hear it urged in extenuation, "But just look, will you? at what *he* wrote about *me*." Well, this sort of reasoning would do very well were this not a Christian nation; and were it not that every civilized individual assents to the injunction, "Return *good* for evil, and *do good* to those who hate you." Terry says, "May God take away the strength from my right hand when I use my experience with the pen to simply lay out a brother-farmer whose practices are different from mine." The contest, it seems, was about potato-bugs. Terry preaches and practices hand-picking the mother-bugs before they lay any eggs or raise any brood. One bug in April means a *host* in June. Quite a number of very successful potato-growers do not like this plan. They think it is too much pains and fuss; and when friend Terry has, at the different institutes, very modestly given his way of doing, there have been some rude and almost unkind replies. However, after he has given the *full* particulars of his plan, they usually look at it a little differently. But even where unkind and harsh speeches have been made, my heart has been rejoiced to hear him reply so gently, and in a way that makes it so evident that he never lays up any thing.

On one occasion, some individual at an institute where W. I. Chamberlain was speaker would have it that friend C. had a *grudge* against him for something that happened at some previous meeting; and friend C. could hardly convince this man that he did not even remember the circumstance; and even if he did, he would by no manner of means have cherished any ill feelings because of it. Prof. Cook once made the remark, that this life is too short, and there are other things of too much greater importance for us to indulge in grudges, even if we feel tempted at times to do so; and I believe this is the spirit of the age.

As a rule, the speakers at our institutes are men of enlarged views and generous feelings; if it were not so they would not be employed by the different States in these important positions. The great busy world oftentimes does not seem to be able to comprehend that they have no time nor disposition to take up little things, or feel hurt at trifles.

Last week one of the clerks told me that a man below was very anxious to see me. He apologized for taking me from my work, but said he was about to change his location, and wanted advice relative to the change. He was a grower of small fruits, and lived several miles from market. He had found a piece of land in a brisk little town, at only $100 an acre. Should he pay that price rather than give $30.00 or $40.00 an acre for equally good land three or four miles from market? He wanted to grow strawberry-*plants* as well as berries, and it was quite necessary for him to be near the post-office. After asking me quite a number of questions I told him I thought it would pay him to go into town. Then I asked him if he had not already seen our book on strawberry culture.

"You mean one that was written by Terry?"

"Yes, by Terry; the latter part of it by myself. We call it *our* book because we are the publishers."

"I don't want any thing to do with Terry or his books."

I was astonished at his reply, and said, "Why, my good friend, what should induce you to speak in that way? Have you ever visited his place?"

He replied that he had not, although Terry's home was hardly more than twenty miles from where he lived.

"Have you ever heard Mr. Terry speak at an institute?"

Again he replied that he had not, but gave as a reason for his position that he did not believe Terry had ever accomplished any such results as he claimed; and what do you think was the ground for his want of faith? It was something like this:

"Now, look here, Mr. Root, if Terry ever raised any such amount of extra strawberries, on clover sod, as he tells about, why in the world doesn't he plant his whole farm to strawberries, and make a big thing out of it?"

He evidently seemed to think he had got a clincher on me this time. I replied:

"Before we go any further, my good friend, I want to tell you that there are a *few* men in this world who are not working solely to make money, and who have no ambition to make a "big thing," especially if the big thing would be apt to bring a load of care, and interfere with other things of far *greater* importance than simply getting money."

I presume that, when he received my reply, he thought what I was saying was kind o' put

on—that may be I was a religious crank, or something of that sort. There are so many people who seem ready to sacrifice a quiet home, and rest and peace, for the sake of making a big thing, that I do not know but that others will feel as did this friend, that my talk about other things being of more importance than making money was something put on for effect. But there is a sad moral right here. The man who, in his anxiety to make a big thing, would sacrifice his home, make his wife a drudge, and let his children go without an education, in order that he may get rich, does not, as a rule, get rich after all. He wrecks his own happiness and that of those who should be near and dear to him, and becomes bankrupt in the end.*

The Bible tells us, "Whosoever will save his life shall lose it"—that is, he who makes his sole anxiety the accumulation of property and money, and in so doing neglects to make things pleasant and easy for his wife, and to look out for the education of his children—in short, to attend to the higher and graver responsibilities—shall surely lose even that which he works so hard for; but, on the contrary, the one who is willing to lose his life for better and higher purposes shall find after all that he has made the very shortest cut toward the thing he especially coveted.

Now, in this connection let us consider this matter of spending one's time and energies in the pursuit of what this world has to offer—or in ministering to self and selfish demands. Jesus said, "Not to be ministered unto, but to minister." Below is a clipping in regard to a man who spent his life in ministering to *self*. It is taken from the *Christian Standard*, of Cincinnati:

A methodical man died in Berlin recently at the age of 73. When 18 years old he began keeping a record which he continued for 52 years, which is the best commentary we have seen on the life of a mere worldling. His life was not consecrated to a high ideal. The book shows that, in 52 years, this "natural man" had smoked 62,871 cigars, of which he had received 43,692 as presents, while for the remainder he had paid several thousand dollars. In 52 years, according to his book-keeping, he had drunk 27,786 glasses of beer and 36,086 glasses of spirits, for all of which he spent $534 . The diary closes with these words: "I have tried all things, I have seen many, I have accomplished nothing." A stronger sermon could not be preached than to put this testimony against that of the first missionary: "I have fought a good fight, I have finished my course, I have kept my faith; henceforth there is laid up for me a crown of righteousness, which the Lord, the righteous Judge, shall give me at that day."

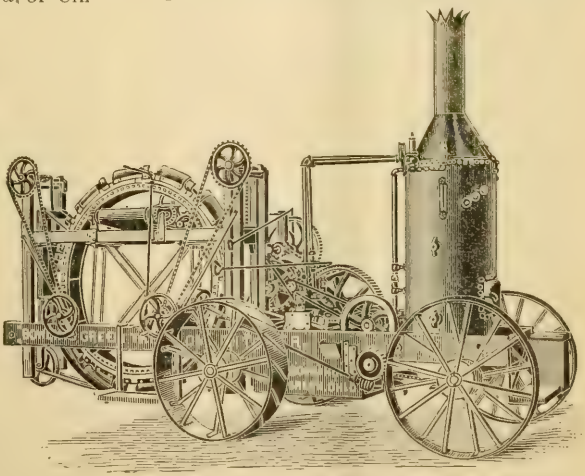
No wonder his decision was, at the end, "I have accomplished nothing." But he is not alone. We see illustrations in this line all around us. Perhaps we have been ourselves doing the same thing more or less. How this little story brings out in sharp relief the pure, unselfish life of Saint Paul! Yes, we have also the example of such lives right around us, in our very midst—perhaps in our next-door neighbor. These, however, are so quiet and unassuming that the great world seldom notices them particularly, unless some unexpected incident brings it to the front, and lets people have a glimpse of the unselfish lives they are living. Who shall finally inherit the earth? Not those who have ministered unto themselves; but the meek, the lowly, the humble, and the unselfish. "Blessed are the meek, for they shall inherit the earth."

*I want to pause right here long enough to say the man went away without buying the strawberry book after all. I spent about half an hour of my valuable time with him; yet all he wanted to know was told a great deal better in that strawberry book than I could possibly tell it. And the book also took in the outside matters that must be considered in accepting the advice I gave him; and yet he was not willing to pay 35 cts. for it. Please do not think that I feel hard toward him. I am quite willing to do as much whenever I can help anybody; but if he is going to raise strawberries and strawberry-plants for a living, *he* is the loser. I feel sorry that he should stand in his own light.

NOTES OF TRAVEL.

ON THE WHEEL.

You will remember that, in our last, I started to see that steam-ditcher. In our book on tile drainage, page 79, friend Chamberlain says: "Such stones, in such numbers as they usually occur on boulder clays that need drainage, make machine digging at any time of the year unprofitable." As soon as I got in sight of the machine I was most pleasantly astonished by seeing rows of ditches so straight and true that it seemed almost as if it must be some fine piece of mechanical work instead of such ditches as we usually dig by hand for laying tile. The dirt was piled up in a beautiful, straight, true, sharp ridge, just near enough the ditch so it did not tumble back into it, and the machine was puffing and blowing and traveling along at a rate that was really astounding to



A MACHINE FOR DIGGING DITCHES FOR LAYING TILE.

my inexperienced eyes. It was my great pleasure to find the inventor and builder, Mr. James B. Hill, of Bowling Green, O., there at the time running the machine himself. Before we go any further I want to tell what it looks like.

The special feature of Mr. Hill's invention is the large wheel at the left hand. This wheel is peculiar in that it has neither shaft nor spokes. In fact, it is just a big stout ring of metal, made of plates of malleable iron securely bolted together. There are teeth along the inside edge of this great wheel, and a stout gear-wheel works in these teeth. Thus you observe the enormous power needed is applied at the *rim* of the wheel. In fact, no shaft nor spokes would stand the tremendous strain. Well, this big wheel is quickly raised or lowered by turn-

ing the proper crank-wheels. The operator stands near this large wheel, near the side of the ditch. His position is where you see the various levers center for pulling and pushing. Of course, I soon began to talk, and ask questions. Mr. Hill is an enthusiast on his invention, as you may suppose. I think he has been at work at it for something like 15 years. He commenced in the ditch, digging ditches by hand, and has slowly worked out the machine he was handling. In a little time he began to look me over, perhaps wondering whether it was worth his time to stop work and bother with me. My good friend Green said something to him, I could not quite understand, as the machine made such a racket; but I noticed all at once Mr. Hill was very courteous and obliging. In fact, he seemed to forget all about his machine, and it was going ahead of itself; but he did not seem to care very much, any way. I was just wicked enough to wish it might run against a stone, to see him fly around and take care of it. Sure enough, in a minute more every time that big wheel came around it began to make the most unearthly shrieking and grunting and groaning—enough to frighten one. I was thinking about running, for fear the machine would go to pieces with a crash, and that the boiler would blow up, or something else direful would happen; but the inventor stood his ground and let the thing have quite a tussle with a stone. It made me think of a father who watches his sturdy boy while he is having a contest with a colt or some other unruly animal. After much sweating and puffing the machine actually scooped the stone out, dumped it on the broad rubber belt that carries away the dirt, and carried it outside on the dirt-pile. Then on it went again. Pretty soon another stone was struck; but this one was so large I feared the machine would actually crawl out of the ditch in its frantic efforts to go ahead in spite of the stone. Said I, "Why, Mr. Hill, it will surely tear those steel cutters all to pieces if you do not do something to help it out."

"Well, suppose it does break a cutter or two. In that wagon over there I have a whole load of repairs. If a cutter gets broken in running against a stone, it is only a minute's work to put in a new one, and so with every thing that is likely to break in the whole machine. The broken part can be taken out and a new one put in its place so quickly and easily that breakdowns are of very little consequence."

Here is another great point in the invention of this machine. The inventor takes into account that different parts must get broken; therefore each part is interchangeable, and the pieces of the whole machine are mostly small. They are made of malleable iron and cast steel, and all the cutters are kept on hand in the wagon, tempered and sharp, ready to take the place of any that become dull or broken.

After a while we got along where there were not so many stones, and friend Hill turned on the steam until the thing fairly hummed. Why, it was almost like plowing a furrow 2½ or 3 feet deep. The sides of the ditch were beautifully true and accurate, and in the bottom was a little round channel for laying the tile. If a stone of any size is encountered, that big wheel is raised until it scrapes it all around. The operator makes the cutters scrape hard enough so as to cut into the stone if it is not altogether too hard to be cut by steel tools. If too hard, the big wheel simply goes over it down on the other side, and then goes on its way. Stones that can not be taken out by the machine must be either broken to pieces or the tiles laid around the stones, as described in "Tile Drainage." There was not very much hand work, however, to do in the field where I saw it working. The ground was upland, and clay land at that, with the average number of boulders scattered along. The ground was already the proper grade along the surface, so no lines were stretched. It cuts to any depth not exceeding 4½ feet. It cuts from ten to twenty rods per hour, and I believe the price paid by the Experiment Station was 15 cts. per rod for 30 inches deep. This is just half what I paid for hand work. It requires only a five-horse-power engine. The steel cutters that do the work are furnished at the factory at a cost of less than a cent apiece; and this one fact, it seems to me, is the crowning feature of the invention. For the work that a steam-ditcher must be called on to do, the cutting tools must become dull very rapidly, or get broken; therefore provision is made for replacing them, as I have told you. The apparatus weighs about 2½ tons, and the price is $1000. Mr. Hill has already built seven machines. The one I saw him working with was No. 7; and I tell you it was worth more than—shall I say a circus?—to see the man who built it operate it, and hear him talk, and answer questions. When I told him I was going to describe it in our journal he seemed greatly pleased, and offered to pay me what was right and fair; but I told him I was running around the country on my wheel, hunting up things that were interesting and valuable, and that in that line of work I did not take any pay.

After we saw the steam-ditcher I found there were some nice springs at the bases of the great hills on the experiment farm; and as you know one who rides a wheel is always thirsty, I took great delight in visiting the springs.

I had read in some of the papers friend Green's plan of training tomatoes on stakes, said stakes being of common lath driven into the ground, supported at the upper ends by stout galvanized wire. This galvanized wire is stretched the whole length of the field, being held firmly by stout posts well braced at each end. I remembered of thinking, when I read it, that these posts and wires and lath stakes would be quite a little trouble; but I did not realize what a handsome plantation or vineyard, if it might be so called, could be made with this arrangement. Why, that tomato-garden was one of the prettiest sights I ever saw in horticulture. The large fine fruit was just then ripening. It was up off from the ground, and the rows were, of course, as straight as a string could be stretched, for that stout wire held them straight and true, and the whole thing was so pretty that the people for miles around were coming there to buy the tomatoes as fast as they were ripe enough to pick. He said the fruit and vegetable dealers of Wooster had objected to the Experiment Station putting their products on the market; but there was not any need, for the people came after the stuff as fast as it was ready. The trial-grounds for the different kinds of tomatoes were on the same plan, but on a smaller scale; and I assure you it was a sight to see all the different kinds that have been talked about and advertised in the catalogues there in full bearing. Of course, the dry weather had affected their work more or less, especially as they have not yet got sufficient water at their command for their various experiments in irrigation.

Somewhere about this juncture friend Green said he was sure supper must be nearly ready. Said I, "Why, friend Green, your wife has been sick with a fever, as I have been told, and I fear you are not in shape to entertain company."

He assured me, however, she was able to be around, and especially wanted to see me.

"But a man down town told me you were moving into a new house. When folks move into new houses they do not want to entertain company, even if they *are* old friends."

To this he replied that Mrs. Green would be disappointed if I didn't come, for he had managed to send her word that I would be there for supper. I wonder whether I shall be telling stories out of school if I tell you confidentially that Mrs. Green was once in my employ. I remember of telling Mrs. Root what a splendid girl we had in one special department. She seemed to gather by intuition what needed to be done. Besides that, she accomplished almost double what even smart women do. Mrs. Root then volunteered to tell me a secret. She said she had heard it whispered that this nice girl expected to get married soon, and probably it was this fact that lent her energy. Now, didn't I tell you, a long time ago, that getting married always gives any man or woman more energy and enthusiasm, and of more value in the world? Yes, and this kind of energy holds out too. Another thing you may not believe; but there *are* lots of grand good people in this world who once served an apprenticeship at the Home of the Honey-bees. Not all of them have *professors* for husbands, but as a rule they are filling important positions *somewhere*.

After having had my accustomed nap, and a nice supper, I was urged to stay all night, as a matter of course; but, to tell the truth, I was longing to get hold of that wheel once more, and use my muscles in making it spin over the hills along the river-banks and across the country. Oh! hold on a bit. While we were partaking of that most excellent supper, I ate so heartily that I did not know but I should have to apologize a little to the assembled company. Thereupon I rested a little while. I remarked, "Friend Green, didn't you ask me, when I first came, if I had been to dinner?"

He nodded.

"Well, I told you I *had* been to dinner, didn't I?"

Then I told the story of my dinner of pretzels and sardines; and, didn't we have a laugh all around?

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

RASPBERRIES FOR HONEY AND FOR BERRIES.

HOW TO GET GOOD CROPS WITHOUT VERY MUCH OUTLAY OF LABOR AND MANURE.

Mr. Editor:—I am interested in Mr. Gleanings from beginning to end. As I am somewhat of a gardener I like the talks about high-pressure gardening very much. He says so much about strawberries I have often wondered why he doesn't touch on raspberries. I think they would certainly go better with bees, for the honey they would get would add considerably to the profit of raising them. I have a small patch, and the bees are at work on them from the time the first blossom appears until the last berry is picked; that is, they will eat the berries if there is nothing else for them to work upon. But this year the sumac kept in bloom until we were nearly through picking, so there was but little trouble compared to what there usually is.

I had about 17 square rods of ground occupied by raspberries this summer, and I sold over $23 worth of berries besides what we used. I got from 15 to 18 cents per quart for them—15 when I sold to be sold again, and 18 cts. at retail. I should have had a little more, perhaps $25 worth, if it had not been for the dry weather and bees eating them. Yes, the bees do eat raspberries if the berries get very ripe, and do considerable damage even if I do not like to confess it. You see, if I raise $25 worth on 17 rods of ground I should raise $215, or a little more, on an acre if the conditions were the same. Is not this about as good as you can do with strawberries? Then there is not as much expense in their culture. Mine have been set out about five years now; and after hoeing the first year and some the second I have not touched a hoe to them, and I don't expect to for years to come. I cut mine back, and cut out the old ones every summer after they have done bearing. I then mulch them with leaves, old swamp hay, or any thing that does not contain seed that might germinate and cause them to become weedy. The best of any thing is the bedding that is taken out from under the horses, as this will fertilize them about right. But if you do not have bedding they should be fertilized with manure of some kind. The object of mulching is to keep down the weeds and prevent the canes from drying up. It will not prevent them from being winter-killed unless you cover to nearly the top of the vines.

The better way, if you want to keep them from being winter-killed, is to wait until the first snow, then fill between the plants on top of the snow, which will prevent them from thawing and freezing (which causes them to die). Cut paths about two feet wide lengthwise of the patch, and about four feet apart, so as to keep them in rows and make it convenient in picking. You should fill these paths with plenty of straw, which is needed to keep the grass down and the ground from becoming trodden down too hard.

The bearing plants should not stand any closer than three feet. Cut off the tops while growing, so as to cause them to branch and harden. The young shoots will be the ones that will bear the next season. No more of these should be left standing than what is needed for fruit, unless you should want to sell some. The plants could be sold at a profit among your neighbors at 50 cts. per dozen.

I know that there is more than one good way of doing the same thing; but this way, so far as I have given it a trial, suits to a dot.

Pomfret Landing, Ct., Aug. 31. J. L. HYDE.

[Friend H., raspberries are already quite extensively raised by bee-keepers; and if I could manage as you do, and still get good crops, I do not know but I should grow them more extensively. I recently saw a statement that friend Terry had not had a hoe nor cultivator among his raspberries, blackberries, or currants for the last three years. I have visited his patch many times, but did not know that it was so long since he had done any cultivating. The only drawback is the expense of straw sufficient to keep down the weeds, and keep the soil damp; and as we have lately purchased some damaged straw for only $4.00 a ton, delivered, I began to think it would be the cheapest way to manage them. We used large quantities of stable manure, but most of that we purchase contains a fearful amount of seed. I suppose it comes from the weeds in the hay that the horses pull over into their bedding. Where some sort of mulch can be bought at a low price, it seems to me this will be the cheapest way to manage raspberries, blackberries, currants, and perhaps gooseberries.] A. I. R.

MUSHROOMS—HOW TO TELL THE GOOD ONES FROM THE POISONOUS, ETC.

A SEASONABLE COMMUNICATION.

For several years past, at about this season of the year I have noticed an abundance of mushrooms or toadstools in the pastures about here, especially among the pine-trees. The cattle seem to consider them a great luxury. I have but one cow, and I have watched her gather them by the hour. Now, it seems to me that, if these had been toadstools, the cow would have been poisoned past recovery. What is your opinion about it? Only this week I saw in the New York *Tribune* an account of a family poisoned by eating a mess of mushrooms in which was found to have been cooked but a single toadstool. Now, it seems to me that, if toadstools are so extremely poisonous, these that my cow makes a business of eating each season must be mushrooms. What is your opinion? How can I be sure which they are? The old woman's test was, to eat them; and if you lived they were mushrooms; and if you died, they were toadstools. I should like a sure test, but still a different one. Would it not be well for you to give an antidote for toadstool poison? N. LUMAN GERRISH.

Nottingham Center, N. H., Sept. 16.

[Friend G., if mushrooms are in your locality so plentiful that the cows are eating them up, you ought to have a bonanza. They are worth in most city markets from 50 cts. to a dollar a quart. Even those that grow wild are usually sold for about half as much. There is no doubt that those you mention are the edible mushrooms. At certain times during the present dry weather they have been quite plentiful, even around here; but they must be gathered promptly or else they become wormy. I do not know what the customary rules are for detecting the poisonous from the other; but the old woman's remedy is all straight, only you must not eat *enough* to kill you. Have your wife cook some, and take one taste and set the dish away. If no unpleasant symptoms follow, the next meal you can eat more, and after that eat heartily of them if you choose. In this way the scientists experiment to determine whether the new varieties are fit for food. Now, my description of the edible kind would be: First, they are, when fresh, pink on the under side. Toadstools are white all over, and especially on the under side. The edible kind has a pleasant smell, as if it were good to eat. When they first burst out of the ground they are pink on the under side; but if they are not gathered until the sides open out so the top is nearly flat, then the under side becomes black. These black ones are just as good for food, but they are very apt to become wormy. On breaking them open, if you see the worms have hatched out don't use them. When the edible kind first break the ground they are round like little balls, with a hole in one side where the stem is attached. These young ones are very nice, but it is a waste to take them when they are so small. I presume much of the danger comes by letting children, or somebody who is careless, mix in the white toadstools. A careful person should gather them, and then the cook should carefully examine them. When you are out in the woods, and have not any dinner with you, you can make a very nice dinner of mushrooms—that is, if you can find them. Just build a fire in some safe place where you won't burn up property. When you have got a bed of coals, just set your mushrooms on them, with the hollow or open side up. As soon as they begin to cook, this cup will become full of a rich juice. If you have a little salt along, sprinkle it in this juice and it will make a delicious gravy for the mushrooms. It seems too bad that so much really valuable food should go to waste simply because of the ignorance of the people in regard to its value. We consider them fully as good as oysters, and they are the best substitute for meat of any vegetable that grows. We shall have to depend on some of the doctors who read GLEANINGS, for a remedy. I do not see how people can be poisoned unless they eat very freely of the poisonous kind; and I would advise all who wish to learn to eat mushrooms, to eat sparingly at first. If you are sure they agree with you, eat more, and so on. As to whether the poisonous kind would hurt a cow, I can not answer; but I hardly think a cow would eat toadstools. It would take a good many more to poison a cow; and perhaps what would be poison to us would not be so to so large an animal. I once fixed some Indian meal and arsenic to kill rats. The cow got at the dish and ate it all up with much evident satisfaction. In great fright I consulted our family physician; but he told me it wouldn't hurt her, and it didn't.]

LIMA BEANS, STRAWBERRIES, ETC.

Dear Bro. Root:—In "High-pressure Gardening" in GLEANINGS for Sept. 1 you speak of "all kinds of lima beans standing drouth and yielding a fair crop." I planted several rows of pole limas in good ground, well fertilized with wood ashes. They grew rank, and blossomed profusely, but didn't yield a tenth of a crop. Burpee's bush limas did some better. They had no wood ashes. Bush beans planted on the west side of my stable, shaded the early part of the day, planted in ground enriched by rotten manure, but not with wood ashes, yielded enormously. Were the ashes the cause of failure?

I have a seedling strawberry that sprang up in the garden, that had leaves on 4 inches wide and 4½ inches long. I have the Sharpless and Crescent strawberry-plants. But this seedling has stood better in the hill, borne larger leaves, and is supporting more plants (over 30) from runners than any strawberry plant on the place. It blossomed profusely but bore no fruit; so, as it is quite secluded from other plants I set out, it must be pistillate. I intend to try it another year to see what it is worth.

I have three hives of Italian bees. I had to feed them for winter. Not content with that, they pitched on to a weak colony of a neighbor's and took its honey, then began on five of his other stands. His were black bees. I told him to close up his hives to half an inch, but it was no use; his bees wouldn't fight. So, to save my neighbor's apiary I sent my bees to a friend two miles in the country to winter, and that ended the robbing. REV. W. E. DEAN.

Tunnelton, W. Va., Sept. 2.

[Friend D., I hardly think it was the wood ashes that prevented your pole limas from bearing. It might be, however, that it was. Our lima beans always bear. I do not know that we ever had the ground too rich for them unless it was when I tried to raise them down on the creek bottom. They grew there, but they did not bear any beans of any account; while upon our clay hills, where the ground is heavily manured, we always get heavy yields. Your bush beans were probably a variety that always yields any way. Was not your new strawberry-plant on very rich ground? It seems to me it is a little strange that it does not bear at all. Even if this late variety bears imperfect berries, if you get it to bear fruit we shall be very glad to hear further from it.]

ONION SEED THAT IS NOT USED—WHAT SHALL WE DO WITH IT?

Of course, it is pretty well understood that onion seed is not safe to sow more than one season. Sometimes it grows pretty fairly, but it is so important many times that a good stand be secured without thinning out, that we wish to know exactly how much seed to put in, or as nearly as may be. I do not know what is usually done with the old onion seed, but I think I have heard of burning it up. Some seedsman asked, through the papers, whether it would be safe to feed it to horses. Well, I will tell you what you can do with it, and not wrong anybody. Use it for raising onion-*plants;* then sell your plants, or plant them out, and you can have just as perfect a stand, or more perfect, for that matter, than the most perfect seed-drill can give. The nicest bunch onions in the world can be produced by sowing your onion seed in the latter part of the summer or during the fall, depending upon where you live, and the severity of the winters. If you can winter them over they will make a much finer onion for bunch onions than the winter or Egyptian onion. Let them get just as large as they will without shooting up to seed. Watch closely; and just as soon as you see one making toward sending up a seed-stalk, "yank 'im out." This is some trouble, but it utilizes all your crop, and those that do not run up to seed at all will make large handsome onions far in advance of seed sown in the spring. My opinion is, that the White Potato onions and the White Multipliers are going to be a great acquisition right in this line. They will furnish us fine bunch onions very early, and it is claimed that they never send up any seed-stalks at all.

THAT HOME-GROWN PEDIGREE ONION-SEED.

I do not know whether the above is the right name for it or not; but what I mean is, the onion seed that I raised from those great big Spanish onions that I found in the Cleveland market. Let me see. I paid about $2.00 for the dozen or so large onions that I planted to get the seed. I picked out the very biggest, and some of them weighed about 2 lbs. apiece. Then I got only about 2 ounces of seed. So you see the onions for the seed cost something like $1.00 an ounce; and put the labor at 25 cts. an ounce more, and my seed cost me toward $20.00 per lb. Never mind if it did. I wanted to know whether the seed would be any better than that to be found in the hands of seedsmen. Well, after all my pains and trouble I came *very near* slipping up on it. The ground was so wet in the spring that we didn't get any onion ground in just the shape I wanted it for these expensive plants until quite late; then the severe drouth set in suddenly; and at present writing we haven't any onions much larger than a hen's egg. Part of them we watered; but I kept thinking it was going to rain; and I am sure now that they were not watered enough. So you see my experiment apparently amounted to nothing. But, just wait. There is a sequel to this. One of my friends came along a few days ago in his buggy, with his wife. Said he:

"Mr. Root, when shall we pull those great big onions? Will they stop growing of themselves, or shall we have to break the tops down?"

"What onions do you mean?" said I.

"Why, we bought the plants of you. I think you call them Prizetaker."

One of the boys who stood by me suggested that they had let this man have a few of my choice onion-plants; but when he came again, and wanted some more to fill out a row, they told him that I had forbidden them selling any more to anybody. You may be sure my countenance brightened up, and I walked toward the buggy quite brisk and smart. We happened to have some Spanish onions, bought in the Cleveland market, on the stand near by, and I picked up a couple as I walked toward the buggy. Said I:

"Why, let them grow, by all means. If our season is long enough they will get to be like these."

As I held them up I expected to astonish my friends in the buggy; but Mrs. H. replied:

"Why, Mr. Root, we have got them almost if not quite as large as those in your hand, already, and they are still growing rank and green; and what we want to know is, when they are going to stop and when they must be gathered."

As soon as I could spare the time I jumped on to my wheel and went over to their place lively. After I had looked at the two rows of onions I said:

"Why, neighbor H., suppose you had an acre like these—what would they be worth this season?"

His wife, however, replied:

"Mr. Root, I am very glad indeed we haven't got an acre like those, especially if I were obliged to carry water for them as I have been doing."

Then it transpired that she had carried water by hand, and watered those two rows of onions nearly every night all through the drouth; and, besides, somebody told them the dirt would have to be pulled away from the bulbs as soon as they began swelling. This they had done, and kept the ground cultivated nice and clean, and there were two rows of Spanish onions like those that are now quoted in the market at $1.40 a crate, or about 5 cts. per lb.; and thousands of people pay this enormous price, or often 10 cts. for a single onion, just because they are showy and handsome, and keep hard and solid and dry almost the whole year round.

Now, I have not any seed like that to offer you. I do not know that there is any in the world. I can raise some more, however, by planting some big onions next spring. One thing I do know; and that is, I never had any onion seed, and never saw any, that would produce a crop of all nice big onions, almost exactly alike, as these have done. Another thing, there is not a red onion nor a white one, nor any sort of hybrid or mongrel, in the whole crop. We went right home and cultivated and watered ours, and are going to push them; but I fear it is now (Sept. 14) almost too late.

TO GET GOOD ONION SEED, AND SOMETHING ABOUT WHITE MULTIPLIERS.

Mr. Root:— We got some Prizetaker onion seed of you last spring, planted and cultivated *a la* "Joseph," and made fine large bulbs; but your seed is mixed. We have been trying to "keep up with the procession" in the onion business, and know from cultivating the improved sorts, that, among that lot, we found Prizetaker, Red Rocca, Yellow Rocca, Maule, White Silver King, and one other sort we are not acquainted with. We prefer Prizetaker because it does not rot so badly here as other big sorts. No harm done here, however.

ABOUT WHITE MULTIPLIERS.

You are partly wrong. They are a standard sort here, and have been for 20 years or more. To note their points in order named by yourself, they never send up seed-stalks, hence no tough ones. The yield we find to be equal to any, under good treatment. They make *the pounds.* You are wrong about the little onion growing all season and making "a big one." The true White Multiplier carries within itself the embryo *cluster,* which it will be sure to

develop without failure. Cut the dry onion in two midway between root and stem; and if you do not see the future *cluster* clearly outlined in the one bulb, your seed is mixed or some other kind. If true, you can count the chickens *before* hatching as well as after. You can tell just how many onions you will have next season — i. e., in numbers. When we want to make them grow larger we plant on better ground and cultivate better. To make still larger, pull out part of each cluster. I will send a few by mail of the kind I am talking about. They were raised on poor ground, and crowded *for sets*. We grow them by the quantity. This onion does not rot.

D. D. Forman.

Slatonville, Ark., Aug. 28, 1893.

[Thanks for your kind criticism, friend F. I believe it is customary for seedsmen to excuse themselves for sending out such onion seed as you mention, by saying that the new varieties are greatly inclined to sport, and also to run back to the original variety; and the fact that other people have had red onions and white onions when they planted Prizetaker seed, no matter where the seed was bought, may lend countenance to this way of getting out of it. But the Prizetaker seed that I mention in this issue, raised from Spanish onions bought in market, gave us onions all alike in color, shape, and in every other way. There is not a red onion or a white onion — not a single one—to be seen anywhere among them. From this and other similar experiences, I am satisfied that it *is* possible to have onion seed true to name. Where seedsmen get it raised by the ton, however, I am afraid we are not likely to get that kind. It can not be afforded at the price the seed is offered. Then comes the question, "If we buy seed of somebody who asks a good deal bigger price, shall we get it then?" I have paid as high as $6.00 per lb. for Prizetaker onion seed; but I am sorry to say it was not a bit better than some that cost less than half as much. I am greatly interested in those potato onions. The few you sent me by mail are exactly as you say. In the middle of each onion is a division line, so that we can really count our chickens before they are hatched. It is not clear to me even yet, however, how you manage to get big onions and little onions. White Multipliers I have raised seem to grow in a sort of haphazard way. Some of them seem to split up into a multitude, and others grew just one or two big ones. If you have a strain of White Multipliers that yields well, it is just what we are after.]

ONION-SETS, ETC., ONCE MORE.

You know, a year ago we had quite a controversy about onion-sets. I said they were too big, and would all go to seed, etc. Well, a good many went to seed too. Last spring I got another bushel of sets, which I thought a good deal better; but on account of the drought at least 90 per cent went to seed; but it happened that I did not have quite enough to fill my patch, so I went to a store and got two quarts to fill out with, and they were the nicest sets I have seen—a good deal smaller than yours, and not one sprouted. They were planted on the same ground, the same day, and had the same culture as yours; but I am sure not over 10 per cent went to seed. They made beautiful onions, only a little later than yours. They came from L. L. Myer & Co., St. Paul, Minn. This made me think about the boy in your employ who had procured some onion seed from the West, and raised such nice sets that you gave him so much for them that you sold them without a margin, for the mere fun of sending out nice sets. This brings me to the belief that the western-grown seed is better than the eastern for us.

About the American Pearl. I got a quart last fall. They grew immensely; but how disappointed I was to find, with most of them, from 5 to 10 little onion-sets. They must have been "running" with Potato onions, like an old box-hive keeper's queens with my Italian drones. Said he, "Mr. J., since you have kept bees here my bees change color. Is it possible that your drones run with my queens?" Well, I think they must, and so with the onions. They are mixing in.

Julius Johannsen.

Port Clinton, O., Sept. 18, 1893.

[Friend J., I do not know but some of the friends will think that this is an "onion" number. The sets you speak of came from Landreth, and he says he raises them and ships them by the carload, and that no one but you and me have any trouble. Now, with the big prices they charge us—five and six dollars a bushel—it does seem to me as though we might have better sets. The boy who raised such fine ones for us last season has mostly failed this year on account of drouth. If paying high prices would be the means of getting something extra we should feel better about it. But the boy bought seed that was a great deal cheaper than our own, and then beat us all to pieces in raising sets. I have never noticed the American Pearl doing as badly as you state. Although a great many of ours have split up into two or three onions instead of one, there would usually be one pretty good-sized onion, and the others small. I wonder whether anybody else has had the same experience with the American Pearl sets. We are just now waiting for a rain so we can plant a big lot of them.

A HOME-MADE GREENHOUSE.

Under the heading of "High-pressure Gardening" I have been very much pleased to learn in many ways about new plants and new ways to garden, so as to have early vegetables, and nice ones. We had never had any experience with greenhouses until we built one. Then there was a new building, and also a new work to run it; but, to tell the truth, the greenhouse nearly ran itself; and, aside from watering the beds to keep it moist, the plants grew *themselves*, and we looked on with joy; and I must say that we never raised as nice radish and lettuce as in the greenhouse. It beat outdoor gardening in quantity and quality. Now, I think that it is or was owing a great deal to the way we heated it. Our greenhouse is 10x30 ft. on the ground, with double roof, all glass, board side up to plate of building, and sheeted with paper between sheeting and siding. For our furnace we took common hard red brick and made it 20 inches by 24, grate surface. In order to get very fine grates I made the pattern of them and had them cast here at the Ballston iron-foundry. I think a set of grates cost a little over a dollar. We covered the smoke, or gas and smoke, all around the greenhouse, in under the beds through a common 6-in. glazed tile, which gave a part of the heating surface. There is another thing. I took a 1¼-in. steam-pipe and went to the blacksmith shop and had it bent. The furnace was at the entrance of the greenhouse, and at the other end was a barrel with one head taken out, and stood on end, top open, filled about half full of water; and this coiled or bent pipe is placed in the top of the furnace, and with another straight pipe coupled on, and going to the barrel of water; and from the other side of the barrel more straight pipe back to the coil or furnace; and, in fact, back to both coil and furnace. Now,

you see both ends of the pipe go in opposite sides of the barrel. Steam goes through one, and water comes back to the furnace and coil always, when the end of the pipe is covered with water; so if you fill the barrel one-half or two-thirds full of water once in 24 hours, all is well, and water will boil in the barrel if all works right. One great advantage is, this barrel of hot steaming water holds the heat, even when the fire is very low; and, the top of the barrel being open, gives steam or vapor circulating around in the air among the plants, which furnishes moisture, and things grow finely, and of a beautiful dark-green color.

Now, this barrel of ours was a kerosene-oil barrel, and cost 50 cts. We took out one head and put some straw in the barrel and set fire to it and let it burn till it began to char a little, then tipped it upside down. It will smother out. Now, these 6-inch tile will crack, about half of them, as they start from the furnace; but take a wagonload of old broken brick, or some that are not broken, and some common mortar, and bed and cover the tile with brick and mortar, and you have a safe thing against fire, and a good heat-retainer. We never set up a night to keep fire with this arrangement, and yet never froze our stuff in the greenhouse; and in weather 20° below zero, although the fire would be quite low in the furnace, the mortar and brick, and hot water, steam, and all, kept things all right.

This arrangement will work in any kind of a greenhouse. Of course, I could tell you much better and easier than I can write, how to arrange to get good draft, etc. There are two good things about this way of heating greenhouses. First, it is the cheapest way that one can heat, and the best, I think, unless one goes to the great expense of steam-boilers. I have seen some of the greenhouses which are heated by steam-boilers, and, as nearly as I can get at the amount of coal they burn to the square foot, we beat it our way. It does not cost ten dollars a year for fuel to run the 10x30-foot greenhouse. One reason we have the furnace grates very fine, or close together, is that, when the weather is mild, we can use quite a lot of coal dust, which you can buy here for 50 cts. a ton, and sometimes the coal-dealers will give it to you to have it drawn out of the way; and with the fine grates there are no cinders in the ashes. All fine ashes fall through. When you rake out the grates, in this barrel at the further end of the greenhouse you can at any time dip out hot water and put it with cold to have it as you wish for watering beds or any other purposes you may need warm water for. We had two faucets in the pipe, running from the furnace to the barrel—one at the furnace and one at the barrel, so we could draw water at either place without carrying it. The bottom of the barrel should stand a little higher than the coil of pipe in the furnace, so that the water can run from the barrel to the furnace.

WM. H. GRAY.

Ballston Spa, N. Y., Aug. 23.

GARDENING IN OCTOBER.

We have just been having a most beautiful rain, and it rained long and slow, so as to soak into the ground very thoroughly. The soil now works most beautifully, and it really seems as if it had been greatly benefited by the long severe drouth; and the turnips, cabbage, strawberries, onion-plants, and especially the celery, are just booming. I never saw things grow faster. About the first of October, almost every season something seems to give me a wonderful enthusiasm for making things grow. When the leaves are falling and so many things are dying, it is just delightful to see hardy plants like wheat, rye, spinach, turnips, etc., come up and grow as if they knew their lives depended upon getting in every inch of growth possible before winter. Then how delightful it is to stir the mellow soil and give such plants encouragement when the air is so cool and invigorating! And, by the way, it begins to be pretty well settled, I believe, that celery grown on upland, or in rich gardens, is nicer and of better flavor than that from the swamp and muck lands. We have been purchasing celery from the swamps almost all summer, on account of the drouth; but just now we have some most splendid White Plume of our own raising.

Now, then, what can we plant, and what gardening can we do in October? Well, you can sow rye, anywhere and everywhere, just as fast as a crop is gathered, or as soon as the frost kills tender crops. You can put out winter onions if you have not done it already. I do not know of any other things that may be sown in October, in the open ground; but, of course, you can put out radish, lettuce, etc., to be covered with glass when frosts come. Small fruits and fruit-trees, grapevines, etc., may, of course, all be planted in October; but as a rule, I believe my experience would be in favor of spring planting unless it is strawberries; and perhaps you had better not put out strawberries in October unless you know from past experience that you can make it succeed. We are going to put out many thousand during the present month of October, and we do not expect to lose one in a hundred—oftentimes less than one in a thousand. I know many others succeed in fall planting, because we are having considerable orders right along every day. Yesterday we had a telegram for 1000 Jessies.

One reason why I love the strawberry-plant is because it is so exceedingly hardy, and you can cultivate it and make it grow. You can manure it and make it throw out runners, not only throughout October, but even in November; and strawberries often make considerable growth with us in December. No matter how much you push them, the sudden advent of severe freezing does not seem to hurt them a bit. The only thing to be guarded against is to keep the frost from heaving them out by the roots; but even if the frost does heave them out, it does not seem to kill them; for if you go over them in the spring, and put them back down in the ground, they will grow almost as well as if they had not been clear out on top for quite a spell. In fact, you can work for strawberries, and make garden, almost every month in the year. If you have some choice variety like the Timbrell, that you wish to push "for all it is worth," by putting them in rich beds and covering them with sash when the weather is severe you can make them keep growing and extending their roots almost every month in the year.

TRADE NOTES.

McINTYRE'S NEW EIGHT-COMB HONEY-EXTRACTOR.

ONE THAT RUNS BY WATER POWER, AND REVERSES IN FULL MOTION BY CENTRIFUGAL FORCE.

On page 626 of GLEANINGS for 1890, Mr. McIntyre described an automatic reversible honey-extractor, one that would reverse under full motion. At that time he had not tested the idea, but he seemed to be very confident that it

would work. Since then he has put it into practical application, and describes it as follows:

This extractor was built last spring, and has extracted 44,000 lbs. of honey, reversing in full motion without injury to the combs or machine. We found it quite a saving of time to be able to reverse the eight baskets in one instant by simply raising the lever shown above the machine; but I do not think it would amount to very much with a small machine, as they are so easy to stop and start. I built this machine largely to show my faith in the principle; but when I found that it worked so well I was almost tempted to get it patented.

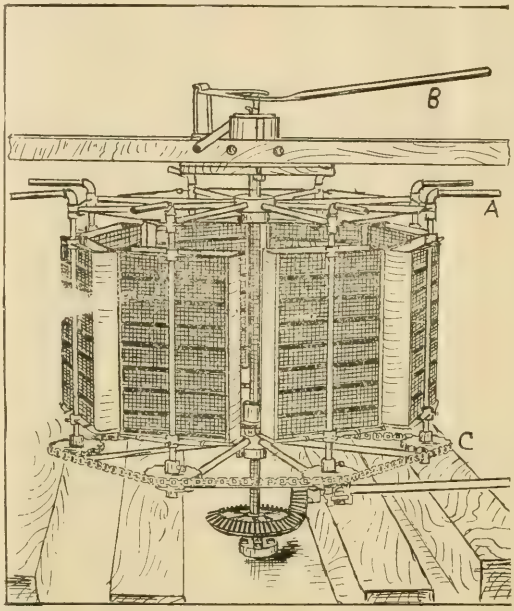


FIG. 1.

The engraving shows the inside gear connected with the water-motor. The water is turned on and off by raising and lowering the large lever at the right. The motor makes about 550 revolutions per minute, and the speed is geared down 3 to 1. The center-shaft is 1⅛-inch cold-rolled steel shafting, with a ball bearing at the lower end, and a babbited box near the upper end. On the upper end of this shaft is a 4-inch iron wheel with a 2-inch face. A band of iron 2 inches wide and ⅛ thick, with a piece of thick leather riveted on the side next the wheel, fastened at one end, and passing almost around the wheel, and terminating in a piece of ⅝ gaspipe about 2 feet long makes a splendid brake.

The hubs which support the arms are cast iron, and the arms are screwed into them. The arms are ⅜ gaspipe, ⅝ outside. A gaspipe T, with a flange cast on each side to fasten the heavy wire braces to, furnishes the bearing for the axle of the baskets. This basket-axle is ⅝ round iron, and the baskets are fastened to it by means of a malleable casting that runs around the top and bottom of the baskets, and is held in place by a set-screw. The edges of the baskets are No. 22 galvanized iron, with a flange turned over the ends of the folded tin braces that support the wire cloth. Near the lower end of each basket-axle is a 5-inch sprocket-wheel fastened with a set-screw. A

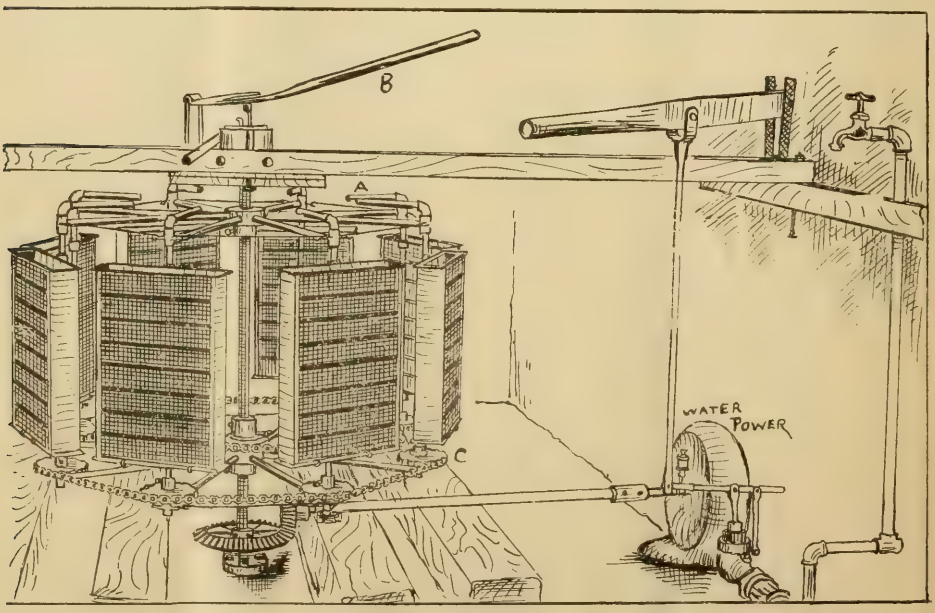


FIG. 2.—M'INTYRE'S AUTOMATIC REVERSIBLE EXTRACTOR.

steel sprocket-chain passes around these wheels, and also around a 5-inch wheel on the center-axle when the baskets are turned; i. e., the center-wheel is locked by a key which runs up the center-axle, and connects with the lever above. When we think the first side is extracted clean, this lever is raised, which draws the key and liberates this center sprocket-wheel, when all the baskets whip around to the outside of their own axle as quick as a wink. The combs do not let go of the wire cloth instantly, consequently much of the honey is out before the combs jump to the outside of the basket.

The outside, or, rather, the last side extracted, is not bruised a fourth as much as the first side extracted. The little levers on the upper end of the basket-axles are to turn the baskets in before starting. This is done with the left hand while the right hand is raising the water-lever. A machine built on this principle should be strong and well made, and will require a larger can than the Stanley. A four-comb machine requires a can about as large as a six-comb Stanley. The can should also have a rim around the top, extending in about four inches to prevent any thick honey from flying out of the can.

Since the honey season closed I have spent a whole day experimenting on centrifugal force. I can run my extractor at any desired speed by turning on more or less water, and I had a splendid opportunity to test this force at different rates of speed and at different distances from the center. I took a piece of lead weighing exactly 1 lb., and attached it to a spring balance fixed to register in beeswax the number of pounds which it drew out, which would show exactly the number of times centrifugal was greater than the force of gravity. I tried it at four different distances from the center, 12, 15, 18, and 21 inches, and at four rates of speed at each distance; namely, 120, 140, 160, and 190 revolutions. The following table shows the result:

No. of rev. per min.	Diam. of circle in inches.	No. of lbs. centrifugal force.
120	24	5
120	30	6
120	36	7½
120	42	9
140	24	7
140	30	8½
140	36	10
140	42	12
160	24	9
160	30	11
160	36	13
160	42	15
190	24	12
190	30	15
190	36	18
190	42	21

Estimating a comb-basket to weigh 3 lbs., and a comb with one side full of honey at 3 lbs. more, we have 6 lbs. for each basket. With eight baskets revolving 18 inches from the center at 190 revolutions, we have 6x8x18=864 lbs. centrifugal force on the baskets, and combs half full of honey. Can you not see how impractical it would be to turn a set of combs in full motion against this force? It would take the strength of a horse to turn four combs.

One interesting thing about this table is the fact that, with the machine running at 190 revolutions per minute, the centrifugal force increased one pound for every inch the weight was moved from the center-axle.

Before closing I will say that this extractor cost me over $50.00, and I don't know how many days' work The reservoir and pipe cost me over $100, and the motor $50.00. Now don't write me to know where they are made, and how much the various sizes cost. They are not manufactured at present at any price. I am not in the business, and the only way I know of for you to get one is to make it yourself, or persuade A. I. Root or some other manufacturer to make one for you.

Fillmore, Cal., Aug 29. J. F. McINTYRE.

[The reader will readily understand the principle on which the extractor reverses at full motion by referring to the engravings. The baskets are pivoted in such a way that, when the honey is thrown out of the combs on the first side, it is nearer the center-shaft by two inches or so than when the honey is thrown out from the other side. The baskets themselves, being pivoted on one side, when turned as shown in Fig. 1 will fly outward, as shown in Fig. 2, unless held by something. Well, that something holds the baskets until the honey is extracted from that one side. Then it releases them and allows them to present the other surfaces of the comb.

There is no doubt in our mind but this is a most practical device for reversing under full motion. It is practical, because it has been thoroughly and carefully tried; and for those who have a large lot of extracting, probably such a machine would be the most serviceable; and yet, after all, the hand machines will extract a tremendous amount of honey. Said one of our extracted-honey men one day, while we were talking about extractors, "I can extract more honey with one of my small machines than I or any three or four bee-keepers can raise." But Mr. McIntyre can easily say that it is not a question how *much* you can extract, but how much you can extract *with the least labor and expense.* If any of the large extracted-honey men would like an extractor of this kind we would undertake to make one; but at present we are not in position to say just what the cost would be.]

IN another column, "Rambler" speaks of the great difference between the comb-foundation mills we first made and those we are now making. We do not wonder that the difference was discovered; for the fact is, another mechanic is now making the mills. They are now made under the direct supervision of Mr. A. Washburn, the one who made the first successful roller comb-foundation mill.

WE have had unusual success in sending queens by mail this year, not only to points in the United States, but even to the more distant ones across the great oceans—to Australia, Sandwich Islands, and elsewhere. We attribute our success entirely to our present method of making the Scholtz (or what is more commonly called the Good) candy. In the early part of the season we were experimenting with candies of a different nature altogether—some having a slight amount of the white of an egg, some with glycerine, and some with other ingredients calculated to keep candy soft; but after having tested all of these it is the same experience all over again—that the Good candy, when *properly made*, is far ahead of any thing else. But why our unusual success with this candy over the same candy used in previous years? Simply in having a good strong man to knead it for a couple of hours. Heretofore a woman has mixed the sugar and honey, and kneaded it into a good stiff dough; but we always discovered that, sooner or later, this candy would vary under different conditions. A good strong man with brawny muscles now handles the chunks of dough, and kneads it continuously with all the strength he can bring to bear for a couple of hours. When thus treated, the candy will remain soft and moist in hot, moderate, and cool weather; and it

seems to make but little difference whether the atmosphere is dry or moist. After having lost pretty heavily in experimenting with candies other than the sugar and honey of the *Good* old sort, we have decided to "stay where we are at," and let Good enough alone.

In midwinter you may find some colonies short of stores, and the only way to pull them through is to give them a lump of candy; or it may be well to have a stock on hand, ready for an emergency.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
Illustrated SEMI-MONTHLY
36 PAGES 7×10
$1.00 PER YEAR

Whosoever shall exalt himself shall be abased; and he that shall humble himself shall be exalted.—MATT. 23:12.

SAY, Rambler, the idea of crossing lightning-bugs with bees is older than the hills.

IN our last issue we expressed a doubt as to whether the fall flow of honey would amount to much throughout the North; but so far reports in our own locality, as well as those in many others, show that the fall flow of honey will be pretty fair in spite of the prevailing drouth.

WE have had several inquiries as to how many there would be in attendance at the big convention in Chicago, from the Home of the Honey-bees. Both of the editors of GLEANINGS expect to be there, accompanied by their better halves. The latter, however, do not promise to be present at all of the meetings, because they say the World's Fair has greater attractions.

WE find it necessary for us to say again, as we have often said before, that articles from small bee-keepers are just as acceptable as those from bee-keepers who number their colonies by the several hundred. It is not the numerical strength of an apiary that decides whether the owner's articles shall be used, but the value of the article itself. Other things being equal, the owner of a large apiary is more experienced than one who has a small number of colonies.

WE have just been down looking over the progeny of the extra yellow queens of the five-banded stock obtained from Mrs. Jennie Atchley. These queens were placed in the apiary of our neighbor, Mr. Vernon Burt, who, as you may know, is testing for us bees, devices, etc. Well, the bees are very yellow and quite industrious, and our friend Burt seems to think they are a little bit ahead of the ordinary stock. We have protested against this tendency on the part of queen-breeders to running to yellow stock; but when the facts show that industry as well as beauty are combined together, we protest no longer. It begins to look now as if the American Italian queens would excel any other queens of this race in the world.

WE extend our grateful acknowledgements to the *Bee-keepers' Review* and the *American Bee Journal* for the pleasant things said of our co-worker and friend, W. P. Root, regarding those book reviews he has been writing up of late. We knew all along that these reviews would be appreciated; and when we came into possession of that gold-mine of old books it occurred to us that our friend would be just the right person to look them over. This he has not only done, but read nearly every thing in them. Those of our readers who have not read the reviews would do well to go back to the June 1st number and read them clear through. The writer's excellent knowledge of the times in which they were written enables him to make these reviews doubly interesting. By the way, the last paragraph in the review for this issue is exceedingly well put. Some of the domestic scenes referred to remind one of the "Cotter's Saturday Night."

QUIET robbing, as spoken of on page 687, has been a great boon to our apiary. Usually, during the month of September there has been very little egg-laying; and this is just the time we want brood-rearing to be doing its best. Barring good protection and good stores there is nothing that insures successful wintering more than a lot of young bees raised in the early fall. Well, this quiet robbing has stimulated our whole apiary to brood-rearing. Queens have been reared, and eggs have been laid during the month just past just about as we find it in the height of the honey-flow, when every thing is booming at its best; and the result is, we shall have a large force of young bees and young queens. It should not be forgotten, however, that young queens are far better fall layers than old ones; and this will account in part for the egg-laying.

VARIOUS methods are now being proposed for scraping propolis off the sections. This is all proper in its place, and is just what we called for; but it may be well to suggest that much scraping may be avoided by using the right kind of surplus appliances. When sections are put into section-holders or shallow wide frames with wide wooden separators placed between, separators wide enough to cover up entirely the perpendicular edges of the sections, and the whole keyed up, very little scraping will have to be done. The surplus arrangement of the Dovetailed hive—not that we want to boom that particular hive in this department—was made along these lines, after having carefully examined the surplus arrangements of prominent bee-keepers, right in their own workshops. When the sections are keyed up tight it closes up the interstices between the sections and the separators; and the tighter these are closed up, the less propolis will be chinked in; in fact, when the crop is stored rapidly, little or no scraping will be necessary when the sections are placed in the arrangement we have described above.

ONE of our correspondents, Mr. John B. Mason, of Tasmania, calls our attention to an experiment that was performed by Sir John Lubbock and Professor Darwin for the purpose of showing for what particular color, if any, the bees have a preference. "The experiment," he writes, "was performed by spreading on a white cloth small squares of variously colored glass, with a dab of honey in the center. The bees were found to always crowd on to the blue." Our correspondent goes on to state that, if blue is the favorite color of the bees, a flag at conventions can be displayed as an emblem of the industry. It can be made of "blue bunting, with a bee in relief, having gold thread for bars, and an old-time straw skep in gold." If the bees do show a decided preference for blue, such an emblem would be very pretty and appropriate; but from some very casual observations with hives of variously colored fronts, we could not discover that the bees showed any particular preference. As to whether bees may prefer one color above another is not a point of any particular importance; but it may be interesting to know, nevertheless.

"THE STINGER," under "Stray Stings," in the *American Bee Journal*, charges GLEANINGS with being somewhat of an imitator. He says that the *Bee Journal* started the picture business in the biographical work, and that GLEANINGS ought to have waited till our esteemed cotemporary had "exhausted the field." Evidently, The Stinger is a new hand in the field or else he is not acquainted with the back numbers of GLEANINGS. Several years ago, biographical work with engravings was a very common feature of our journal. In fact, a goodly number of pictures of bee-men which have appeared in the *Journal* were printed on plates from this office, all of which our esteemed friend Editor York has generously acknowledged. Say, Stinger, didn't you pretty nearly copy after Stray Straws in your heading? The style is much the same, the first part of the name is the same—well, well—" we do not intend to sting hard over this little matter;" and if our friend Stinger is present at the big convention in Chicago we hope we shall have the pleasure of getting a good grip of his hand.

AMONG all the interesting pictures we have put in GLEANINGS, we do not think we ever inserted one that is more so than the group showing the Atchley family—the most extensive queen-breeders in the world. In 1893 they raised (or will have done) 5000 queens; in comparison with which no wonder Bro. Hutchinson said in the *Review* that no one in the North, has any business rearing queens. The Southern breeders have every advantage in the world over those of the North. We clip the following from the Houston, Texas, *Post*, of Sept. 18:

Mrs. Jennie Atchley, the noted bee-breeder of the South, has moved her outfit to Beeville, and will in future make this her headquarters. Their apiary in all consists of about 500 stands, mostly of improved stock. She was heard to remark yesterday, while unloading, that she had some queens worth at least $100. To one not up in "beeology" this seems very extraordinary for a single bee, and we so remarked; but the lady replied that she had one queen from which she had realized $1000 this year. Mrs. Atchley seems perfectly at home among her "pets," as she calls them, and realizes a handsome income each year. Her family consists of ten, all of whom are welcomed to Beeville's society. What has been Greenville's loss by their removal from that city has been Beeville's gain.

HINT TO EXTRACTED-HONEY MEN; QUIET ROBBING, AND HOW IT MAY BE OF SERVICE IN CLEANING OUT COMBS JUST EXTRACTED.

SOME nine years ago our neighbor Burt discovered accidentally that quiet robbing, such as we described in our issue for Sept. 1, was all that we claimed for it in that number. Verily there is nothing new under the sun. He discovered it in this way: After one extracting he had placed a lot of combs, just extracted, tiered up in the honey-house. The top of the tier was carefully covered, and, as he supposed, every thing was secured from robbers. Very shortly after, he noticed the bees were going under the building. Suspecting that they were at these combs, he pulled open the hives, and, to his horror, found them full of robber bees. On examination he discovered that there was a small knot-hole in the floor, just under the hive. Through this the bees had been making their way, one or two at a time. On the principle that it is best to let robbers clean things out when they once get started, he closed up the hives and let the bees have their own sweet will. Quite to his astonishment there was no uproar in the apiary, and the combs were cleaned out beautifully. The plan worked so well that he stored other combs, just extracted, over the knot-hole, and these were cleaned out in the same way. As this was after the honey season, brood-rearing was stimulated, extracting-combs were cleared, and every thing was done quietly, decently, and in order. It is almost needless to say that he lets the bees clean all his extra combs, just extracted, in that very way, up to the present day.

We give this point as we think it will be seasonable and valuable to many who have not yet extracted their combs, because there will be warm days in Indian summer when the extracting can be done very easily.

THE *American Bee Journal* for Sept. 28 is just at hand; and in relation to the big convention to be held in Chicago, we find that the following are some of the subjects that will be discussed:

Production of comb honey; winter losses; the Bee-keepers' Union; prevention of swarming; grading honey; apiculture at experiment stations.

Also that the following named persons have signified their intention of being present, nearly all of whom are bee-keepers of world-wide reputation:

Frank Benton and family; O. R. Coe; H. D. Cutting; A. N. Draper; J. A. Green; J. M. Hambaugh; R. F. Holtermann; W. Z. Hutchinson; W. G. Larrabee; Dr. A. B. Mason; Dr. C. C. Miller; Thos. G. Newman; A. I. Root; C. F. Muth; Barnett Taylor; Mrs. J. N. Heater; L. C. Axtell; W. S. Pouder; O. L. Hershiser; F. W. Jones; R. B. Leahy; M. H. Mandelbaum; Dr. P. J. Parker; J. A. Stone; C. C. Clemons; G. E. Hilton; G. R. Pierce; C. H. Thies; H. C. Mellon; C. Theilmann; T. Oberlitner; F. A. Gemmill; G. B. Brown; S. T. Pettit.

FLORIDA. For sale, 75 hives of bees; inquire of AUG. LEYVRAZ, Francis, Fla. 19tf

Wants or Exchange Department.

Notices will be inserted under this head at one-half our usual rates. All advertisements intended for this department must not exceed five lines, and you must SAY you want your adv't in this department, or we will not be responsible for errors. You can have the notice as many lines as you please, but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices offering articles for sale, can not be inserted under this head. For such our regular rates of 20 cts. a line will be charged, and they will be put with the regular advertisements. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange 13 swarms of bees, 12 empty hives, 48 crates filled with sections, starters, and separators, 800 brood-frames, 60 wide-frames in Simplicity hives, for poultry, pigeons, or live stock. W. H. R. UMSTEAD,
316 North Center St., Bethlehem, Pa.

TO TRADE—For honey—ext'd or comb—3 safety bicycles, one 30-inch and 2 28-inch wheels, 1¾-inch cushion tires—2 brand new, one used some. Address JNO. A. THORNTON, Lima, Ill.

WANTED.—To exchange pneumatic-tired safety bicycle, for pure comb honey, or sporting goods, electric dynamos, etc.
ROBT. B. GEDYE, 668 Todd St., La Salle, Ill.

We received the sewing-machine, and it works all right. This makes the second one we sent for, and they both sewed as nice as any of the other machines. W. A. FLORA.
Eaton, O., Sept. 2.

To Get Acquainted,

We will send the **Bee-keepers' Enterprise** from now until Jan., '95 (16 months), for 50 c.; or 3 months for 15 cts. You will be pleased with your investment, in either case.

Burton L. Sage,

New Haven, = = Conn.

☞In responding to this advertisement mention GLEANINGS.

Warranted Golden Queens,

80c; 6 for $4.25; dozen, $8.00; young tested, $1.00 up. Write for prices on select and breeders.

J. B. CASE, Port Orange, Vol. Co., Fla.

BEES FOR SALE.

Thirty colonies in No. 1 shape, mostly in new L. hives. The lot for $100.00, or $3.50 each in small lots. Pure Italian, $5.00.

W. D. SOPER, Jackson, Mich.

Muth's

Honey - Extractor.

Square Glass Honey-Jars,
Tin Buckets, Bee-hives.
Honey-Sections, &c., &c.
Perfection Cold-Blast Smokers.

APPLY TO
CHAS. F. MUTH & SON, Cincinnati, O.

Send 10-ct. stamp for "Practical Hints to Bee-keepers." Please mention this paper.

If You Wish to Smile,

Try my fine Italian queens. Either 3 or 5 banded, bred in different yards, 75 cts. each; $4.25 for 6, or $8.00 per doz. Prices to dealers, and by the quantity, on application. Fine breeders, $5.00; always on hand. Prices for those that produce strictly 5-banded bees, on application. Remember, I guarantee safe arrival, and satisfaction in the bounds of reason.

MRS. JENNIE ATCHLEY,
Beeville, Bee Co., Texas.

OTTUMWA BEE-HIVE FACTORY.

Bee-keepers, look to your interests. Every thing in the line of bee-supplies constantly on hand. Price list free. **GREGORY BROS. & SON,**
1-23o Ottumwa, Ia. South side.

Read what J. I. PARENT, of CHARLTON, N. Y., says—"We cut with one of your Combined Machines last winter 50 chaff hives with 7-inch cap, 100 honey-racks, 500 broad frames, 2,000 honey-boxes, and a great deal of other work. This winter we have doubled the amount of bee-hives, etc., to make, and we expect to do it all with this saw. It will do all you say it will." Catalogue and Price List free. Address W. F. & JOHN BARNES, 545 Ruby St., Rockford, Ill.

When more convenient, orders for Barnes' Foot-Power Machinery may be sent to me. A. I. ROOT.
23tfd

VANDERVORT COMB - FOUNDATION MILLS.

Send for samples and reduced price list.

ltfd **JNO. VANDERVORT, Laceyville, Pa.**

Gleanings In Bee Culture

For only 50 cts. The journal has a big circulation because it is made up of practical ideas, good printing and paper, and first-class original engravings—yes, lots of 'em; in fact, because it has MERIT. But *merit* alone won't boom the circulation; so we propose to offer it TO NEW SUBSCRIBERS, from now on till Jan., 1895, for $1.00. For $2.50 we will send the journal to new subscribers from now till Jan., 1895, and one of those new improved Crane smokers, postpaid. Crane smoker alone $2.00. Send for our free illustrated 52-page catalogue of Bee-keepers' supplies, and sample copy of GLEANINGS.

A. I. ROOT, Medina, Ohio.

Reid's

Fruit Trees, Small Fruits, Vines, Roses, Ornamentals.

All the best new and old varieties. The celebrated TIMBRELL **Strawberry. New Fruits a specialty.** Buy direct and save one half. Price List *free.*

E. W. REID, BRIDGEPORT, OHIO.

FOR ALL KINDS OF KEEPERS SUPPLIES. ADDRESS LEAHY MFG. CO. HIGGINSVILLE, MO.

In writing advertisers please mention this paper

DOVETAILED HIVES, SIMPLICITY HIVES,

SECTIONS, EXTRACTORS, ETC.

FULL LINE OF

BEE-KEEPERS' SUPPLIES.

60-PAGE CATALOGUE. ltfdb

J. M. JENKINS, WETUMPKA, ALABAMA.

☞In responding to this advertisement mention GLEANINGS.

Bee-Hives.

Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue 23-22db

W. H. PUTNAM, River Falls, Pierce Co., Wis.

For new price list of PURE ITALIAN BEES AND QUEENS, AND WHITE AND BROWN FERRETS, ADDRESS N. A. KNAPP, ROCHESTER, LORAIN CO., O.

TAKE NOTICE!

BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH,
14tfdb New London, Wis.

Warranted Golden Queens,

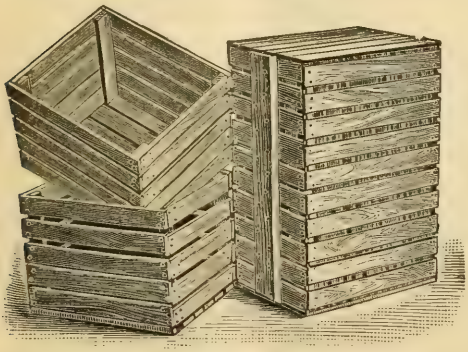
80c; 6 for $4.25; dozen, $8.00; young tested, $1.00 up. Write for prices on select and breeders.

J. B. CASE, Port Orange, Vol. Co., Fla.

BEE-HIVES AND SUPPLIES

Send for catalogue free. Address **SAMUEL JONES,** Highland Park College, Des Moines, Iowa. 1-19db

BUSHEL BOXES.



The above cut shows our new-style *all-slatted bushel box*. We have two other styles; one has slatted bottom and sides with solid ends in three pieces called the *slatted bushel box*. The other has solid ends and close bottom and sides, and is bound with galvanized iron and called the *galvanized bound box*. These boxes were devised by T. B. Terry for handling potatoes, for which purpose nothing could be handier. The potatoes are picked up into the boxes in the field and left in them till sold. Other crops, such as cucumbers, tomatoes, and apples are being handled in these same boxes. They are of such a size that two go crosswise in an ordinary wagon-box. Outside measure is 14¼x16⅞x12½ deep, and they hold a bushel of potatoes level full so they can be piled one upon another. The above cut shows two *all-slatted* boxes nailed up, and a bundle of 15 alongside; 13 of the 15 are in the flat, packed inside the other two, and nails of the proper kinds are included. The *slatted* and *galvanized bound* boxes are put up in the same way, except there are only 12 in a package instead of 15. Each package weighs about 85 to 90 lbs.

PRICE LIST.

All-slatted bushel box, per crate of 15	$1 50
Slatted bushel box, per crate of 12	1 50
Galvanized bound bushel box, per crate of 12	2 10

In lots of ten crates, 5 per cent discount will be deducted. Price each, nailed, 15, 18, and 22 cents, respectively. A 20-page pamphlet called Handling Farm Produce, telling all about these boxes, mailed free on application.

A. I. ROOT, Medina, O.

Pardonable Pride.

That which a good farmer can take in having the best fenced farm in the county. His city brother with the best-dressed wife, or fastest horse, must continually add to his investment, while he with his Page fence properly put up can safely "rest on his laurels."

PAGE WOVEN-WIRE FENCE CO., Adrian, Mich.

☞In responding to this advertisement mention GLEANINGS.

Found at Last.

Jennie Atchley has found at last a place where she can raise *good* queens all the year round. Northern dealers, please take notice and arrange for your queens early. Fine breeders booked now for spring delivery, $5.00 each; or, if paid in advance, $4.50. Can send you nice untested queens for $1.00 any day in the year. Safe arrival and satisfaction.

MRS. JENNIE ATCHLEY,
Beeville, Bee Co., Texas.

P. S.—Remember, I have as fine stock Italian bees as are to be found.

GOOD NEWS TO THE HELPLESS.

☞For illustrated catalogue of **INVALID-LIFTER** by which a child can tenderly lift you to and from Chair, Bed, Bath, Carriage, turn over in bed, hold in reclining position, or on a stretcher until your bed is made. **A. BEESON, Loveland, Colo.**

Winter and Shipping Cases

Are now in season. Get our prices on same.

I. J. STRINGHAM, 105 Park Place, N. Y.

21-20db Please mention this paper.

Cash for Beeswax!

Will pay 21c per lb. cash, or 24c in trade for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 28c per lb., or 30c for *best selected wax*.

Unless you put your name *on the box*, and notify us by mail of amount sent, I can not hold myself responsible for mistakes. It will not pay as a general thing to send wax by *express*.

A. I. ROOT, Medina, Ohio.

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CONVENTION NOTICES.

The 19th annual meeting of the Vermont Bee-keepers' Association will be held in Burlington, Vt., Jan. 24, 25, 1894. Particulars soon.
H. W. Scott, Sec., Barre, Vt.

The 14th annual convention of the N. E. Ohio and N. W. Pennsylvania Bee-keepers' Association will meet in the parlors of the Coleman House, Union City, Pa., Oct. 25th, at 10 A.M., for a two days' session. All interested are invited. Union City is located on two roads—the New York, Pennsylvania & Ohio, and the Philadelphia & Erie. Hotel rates, $1.00 a day.
Geo. Spitler, Sec., Mosiertown, Pa.

SPECIAL NOTICES.

EXTRA EARLY AMERICAN PEARL ONION-SETS.

As so many wanted them after the rains, we have just received another barrel of sets. For prices, see page 689, Sept. 1.

GAULT'S PERPETUAL RASPBERRY.

Since the matter on page 791, giving the price of the above raspberry, was in print, I have received a letter from friend Gault, saying his whole 10,000 are practically sold already.

CHAFF HIVES AND WINTER CASES.

These are seasonable goods for this month, and you will find none better or cheaper than those listed on pages 23, 24, and 25 of our catalogue. Our winter case is larger than it was last year, and a mammoth cover telescopes down over it, making it the most desirable winter protection for single-walled hives that you can obtain. Price in flat, 60c each; $5.00 for 10; nailed and painted, 15c each extra.

HONEY MARKET.

We are still filling orders for choice comb and extracted honey at the same prices as heretofore; viz., choice comb honey in 1-lb. sections, in lots of 100 lbs. or over, 16c per lb. We have a little dark or buckwheat honey that we will sell at 13c, or, for a full crate of about 200 lbs., 12c. Choice extracted honey, in 60-lb. cans, two in a case, 8½c per lb.; two cases or over, 8c. Single can, 9c. Comb honey in lots of 100 lbs. or more is crated so as to reach destination safely by freight.

GLASS HONEY-PACKAGES.

Owing to the long-continued strike among glass-workers there is beginning to be a scarcity of many items in glassware. The stock of one and two pound Muth square jars has been exhausted for over two months, and no hope of getting more till the glassblowers begin work again. We are also out of ½-lb. "Oaken Bucket" pails in full packages. We have a few yet for small orders. All other glass packages in our list we can supply promptly from stock here.

FIVE PER CENT DISCOUNT.

Forehanded bee-keepers are already beginning to plan for next season. Many know now, or will very soon, many things they are sure to need. It will be to your interest to get your order in before Dec. 1st; for, during the time intervening before that date, we allow 5 per cent discount from our catalogue prices, pages 10 to 30, on goods ordered for next season. This applies also to hives of all kinds, and winter cases, but not to honey-packages and shipping-cases for immediate use.

EXCELLENT SEWING-MACHINES.

We have for about five years been selling sewing-machines, during which time we have disposed of a number of hundred machines. Here is a sample of many kind words we receive:

The sewing-machine arrived in good order last Saturday. I am more than pleased with it, and thank you for the price you gave me on it. I don't wonder at the business you do. You always make your customers happy. M. T. Williamson.
Trumansburg, N. Y.

The favorite style machine, and the one we recommend, is called the Columbian. It is high-arm and high-grade, warranted for ten years, and sold for $16 to $20, depending on the number of drawers.
No. 3, with 2 drawers, one side.....$18.00
" 4, " 4 " 19.00
" 5, " 6 " 20.00

Shipped direct from Chicago. Send for circular with further description.

WANTED.—BEESWAX.—Will pay highest cash price for same.
I. J. STRINGHAM, 105 Park Place, N. Y city.

$5.50 For 3, or $10.00 for 6, Finest Brown Leghorns, or Plymouth Rocks. Other varieties. Circular free. Address Geer Bros., St. Marys, Mo., or H. B. Geer, Nashville, Tenn.

Apiary for Sale.

Fine opening for queen-rearing. Five months' honey-flow. No failure in 15 years. No disease among bees. No loss or expense in wintering. Pure Italians only, in this valley. Best climate in America for persons afflicted with bronchitis, catarrh, or incipient consumption. Address
S. W. SHERFEY, Las Cruces, N. M.

Young Tested Italian Queens,

Bred from best imported stock, $1.00 each; untested, 60c; these queens are all very prolific. Safe arrival guaranteed. H. G. Quirin, Bellevue, Ohio.

FOR SALE. A farm of 56 acres; 185 colonies of bees in good condition; 2 acres of fine strawberries; 2 acres of blackberries; 1 acre of raspberries; with good buildings on. Honey crop for this year 4700 lbs. comb honey.
Address Box 419, Lima, Ohio.

WANTED.—A buyer for 27 acres of "Winter garden" land, amid the Palmettos, Mangroves, Bays, etc., on the INDIAN RIVER, Fla. Water front. R. R., 1¼ miles. Ocean, ¾ mile. Address
LOUIS K. SMITH, Grant, Brevard Co., Fla.

FLORIDA. For sale, 75 hives of bees; inquire of Aug. Leyvraz, Francis, Fla. 19tf

For Sale. One trio each of WHITE and GOLDEN WYANDOTTES at $5.00. One pen of 5 White Wyandottes, $7.00. Fine birds of last spring's hatch.
J. S. MASON, Medina, Ohio.

Wants or Exchange Department.

WANTED.—To buy or rent a small farm, in good locality for bees. If the place has bees on it, all the better. Address J. E. Henderson,
Valley Grove, Ohio Co., W. Va.

WANTED.—To exchange extracted honey for a good bicycle.
W. C. Gathright, Cameron, Texas.

WANTED.—To exchange printing-press and several fonts of type; prints 4½x9 in., self-inker, for safety bicycle.
C. L. Brooks, Deansville, N. Y.

HONEY COLUMN.

CITY MARKETS.

CHICAGO.—*Honey.*—We are receiving liberal shipments of white comb honey, which continues to sell at 15 and 16 cts. per lb. very soon after arrival. The demand continues equal to the receipts, which makes a very satisfactory market. We have very little sale for dark honey of any kind or quality. When sold it brings about 12 to 13 cts. Extracted honey is without special change either in demand or supply from our last quotations. It sells at 6 to 7 cts., according to color, quality, flavor, and style of package. Beeswax sells at 22c. The quality of the honey in the comb continues to be above the average of other seasons. This is one of the best months in the year for disposing of honey, and those intending to market elsewhere than at home would do well to ship before the cold weather sets in. We are receiving frequent calls from bee-keepers who are here visiting the Fair, and we extend a cordial welcome to those who are yet to come. We are benefited by meeting parties interested in honey. R. A. BURNETT & CO.,
Oct. 7. 161 So. Water St., Chicago, Ill.

MINNEAPOLIS.—*Honey.*—We have a very strong market on almost every thing in the fruit line, but honey seems to move very slowly at present. Our receipts consist of a very poor quality of honey, as a rule. Fancy comb honey, 1-lb. sections, is picked up quite fast at from 17 to 20 cts. Most customers are not willing to pay over 16c for a very choice white grade of honey. Our to-day's sales are running about as follows: Extra fancy white, 18@20c—mostly 18; amber, 14@15; dark, 12@13. Extracted, fancy white, 7½@8; dark, 6@6¾. J. A. SHEA & CO.,
Sept. 28. Minneapolis, Minn.

NEW YORK.—*Comb Honey.*—There is a fairly good demand for fancy stock, with a large supply. One-lb. sections sell at 14@15; 2-lb., 12@13. The demand for off grades is very light, and slow sale at 12@12½ for 1-lb., and 11c for 2-lb. Buckwheat is scarce, and sells at 11@12c for 1-lb., and 10c for 2 lb. The market for extracted honey is very quiet, with plentiful supply of all grades. We quote: White clover and basswood, 6@6½; California, 5¼6; Southern, common, 55@60c per gal.; choice, 65@70c per gal. Beeswax is in fair demand at 23@25c as to quality. HILDRETH BROS. & SEGELKEN,
Oct. 10. New York.

BUFFALO.—*Honey.*—The market is virtually unchanged in every particular. The hard times have evidently affected the demand, as at 14 and 15 cts. the sales are somewhat limited, and have to be pushed quite sharply to realize these prices quickly. Nevertheless, when the weather gets sharp and cold the demand must increase. The receipts in this market we hardly think are as large as they were last year at this time. We continue to advance 10 and 11 cts. per lb. on strictly fancy 1-lb. combs delivered here, and believe we can handle as much as we usually do. Write us for further particulars. BATTERSON & CO.,
Oct. 7. Buffalo, N. Y

ALBANY.—*Honey.*—The comb honey season is now at its height, and stock is selling off nicely. The bulk of receipts is No. 2 clover, which sells at 13@14 cts. Fancy white and buckwheat seem to be scarce. The former sells at 15@16c and the latter at 11@12c. Extracted honey is selling very slowly and stock is accumulating, so we would advise producers to hold it back for a month or so. We quote light at 7@8c; dark, 6c. CHAS. MCCULLOCH & CO.,
Oct. 8. 393, 395, 397 Broadway, Albany, N. Y.

ST. PAUL AND MINNEAPOLIS.—*Honey.*—Our market for comb honey is improving, and receipts since our last report have moved off fairly well, prices unchanged. We quote best white comb, 14@15 cts. California extracted, lower. Under free offerings from the coast, we quote 5½@6c for white or amber in 5-gallon tins. SMITH & AUSTRIAN,
Oct. 9. 290 East Sixth St., St. Paul, Minn.

BOSTON.—*Honey.*—We quote honey as selling fairly well. Best white, 15; extracted, 6@7. Beeswax, 25@28. BLAKE & RIPLEY,
Oct. 9. Boston, Mass.

CINCINNATI.—*Honey.*—Arrivals are large of extracted honey, with a slow demand at 5@8c on arrival. Arrivals of comb honey are fair, with fair demand at 14@16c for best white in the jobbing way. There is a fair demand for beeswax, with good supplies on the market. Good to choice yellow brings 20@23c on arrival. CHAS. F. MUTH & SON,
Oct. 10. Cincinnati, O.

KANSAS CITY.—*Honey.*—Honey market still little slow. We attribute it to the continued hot weather. We quote No. 1 white comb, 15@16; No. 2, 13@14; No. 1 amber, 14@15; No. 2, 11@13. Extracted, white, 6@7; amber, 5½@6; dark, 5. Beeswax, 20@22. CLEMONS, MASON & CO.,
Oct. 9. Kansas City, Mo.

ST. LOUIS.—*Honey.*—Market very quiet. There seems to be little demand for either comb or extracted. We quote comb at 10@14; extracted, 4@4½. Prime beeswax, 21. D. G. TUTT GROCER CO.,
Oct. 10. St. Louis, Mo.

KANSAS CITY.—*Honey.*—Stock of comb honey good. Demand fair. We quote fancy white at 16; No. 1 white, 15; fancy amber, 13; No. 1 dark, 11. Extracted, white, 7; amber, 6½; dark, 5. HAMBLIN & BEARSS,
Oct. 9. Kansas City, Mo.

DETROIT.—*Honey.*—Best white comb honey finds a ready market at 14@15c; dark at 12@13. Extracted, 7@8. Beeswax, 23@24c. M. H. HUNT,
Oct. 9. Bell Branch, Mich.

CLEVELAND.—*Honey.*—No. 1 white honey continues to be in good demand. We believe cold weather will bring a good call for comb honey. At present it is selling at 16@17c. WILLIAMS BROS.,
Oct. 7. 80 & 82 Broadway, Cleveland, O.

"DEAD-RIPE" HONEY.—Mostly clover and linn. Been tiered up on the hives through the hot weather; $4.50 per can (60 lbs.); darker, $4.00. Samples by mail, 5c each. 19tfdb
OLIVER FOSTER, Mt. Vernon, Linn Co., Iowa.

FOR SALE.—2000 lbs. of fine comb honey, in 1-lb. sections, 24-lb. cases, and 2000 lbs. of clover and basswood honey, in 60-lb. square jacket cans. Sample of extracted honey by mail on application. EZRA BAER, Dixon, Illinois.

WANTED.—To buy 50,000 lbs. of white comb honey in small single-tier cases. B. WALKER, Evart, Mich.

FOR SALE.—Linn and white clover extracted honey, by the 60-lb. can and barrels. J. B. MURRAY, Ada, Ohio.

WANTED.—500 lbs. dark extracted honey. H. G. CAMP, Winona, O.

BUFFALO, N. Y. Unsurpassed Honey Market.
BATTERSON & CO. Responsible, Reliable, Commission Merchants. 18tfdb **and Prompt.**

CHAS. ISRAEL & BROS., 110 Hudson St., N. Y.
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whether it is profitable to use foundation in the brood-nest when hiving swarms, and which is the more profitable, large or small swarms. Extensive and elaborate experiments have been made upon these points the past season at the Michigan Experiment Apiary, and a report appears in the Oct. REVIEW. The reading of this report may be a surprise to some. The publishing of these reports is one of the best things the REVIEW has ever done. I am sincere when I say that no bee-keeper can afford *not* to read them. They began in July, and the REVIEW will be sent from that time to the end of the year for 75 cts., and with it will be sent the 50-cent book, "ADVANCED BEE CULTURE."

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Ventura, Cal., Aug. 18, 1893.

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A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
PUBLISHED BY A. I. ROOT
$1.00 PER YEAR MEDINA OHIO

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STRAY STRAWS

FROM DR. C. C. MILLER.

KANUCKS have reason to be proud of editor Holtermann. He's making the *C. B. J.* shine.

THE PANIC has come and gone—at least it is going—and it seems to have troubled bee-keepers about as little as any other class.

YEARS ago we got big prices for honey; but a pound of honey then would buy no more calico or sugar than it will now, so where's the difference?

"LET NO ONE fear that apicultural experiment stations may be either too numerous or too well equipped."—*Experimenter Taylor, in Review.*

WASPS are talked about sometimes in England as something very destructive to bees. I never heard of their being troublesome in this country.

THE HONEY SHOW at the World's Fair has been brought to a high state of perfection, but the exhibitors are putting on finishing touches every day.

BEES in this part of the country will have little to do but to sleep for the next five or six months. Some of their owners would like to do the same.

HUTCHINSON thinks I ought to have mentioned that, when he takes bees out of cellar as soon as they can fly, he gives them protection. I think so too.

HEAVY RAINS have brought green again to the pastures that looked entirely dead two weeks ago, so we will hope that some of the white clover will be left alive for next year.

PHRENOLOGY, as applied to bees by Dr. J. D. Gehring, appears in *A. B. J.* Dr. G. has been examining the heads of drones, and finds they have bumps indicative of their usual character.

STRIKES have taken place among all classes of laborers, skilled and unskilled, except among the laborers of the bee-keeper. His laborers, skilled laborers of the highest class, never strike.

EARLY GRANULATION of honey, both comb and extracted, is making trouble in England this year. One man complains in *B. B. J.* that, early in July, honey was granulated solid while in the hives.

QUEER THING, how one country is all taken up with one thing, while something entirely different is all the go in another. In this country it's non-swarmers and self-hivers, while in England it's the Wells system of running two colonies under one set of supers.

MAKE YOUR PLANS now, to keep rats and mice away from your bees in winter. If you can't fasten them out of the cellar, you can fasten them out of the hives, with wire cloth three meshes to the inch.

I DIDN'T THINK IT. I didn't believe Rambler was so hard-hearted as to deliberately tie a strap to a donkey to hold on by while he kicked the poor beast, as shown on p. 737. I wouldn't have believed it if I hadn't seen it.

DRONES are free and easy in their manners, entering other hives than their own with safety. Hasty thinks this may extend to their going to other apiaries, and thus a drone may by successive stages get 20 miles from home.

THE LOUISIANA HOTEL is the place which will seem like home to a good many bee-keepers. I spent the last week in September at the big show, and stopped at the Louisiana so as to get used to it before the convention. It's a good place.

HASTY, in *Review*, mentions my obituary in *Api*, and then forebodingly adds :—And as for the rest of us, we can fairly hear the grim editor humming softly to himself—

"Ye living men, come view the ground
Where you must shortly lie."

FRIEND ROOT, on page 754, tells how to make a dinner of mushrooms when you are out in the woods, by building a fire in a safe place. I know a heap easier and safer plan. Eat 'em raw. I've done it lots of times. But they're better fried in butter. Yum! yum!

FOUNDATION from bleached wax, says the *B. B. J.*, has become a chronic cause of complaint in England for the last few years. Bees refuse to use it, and, if forced to use space where it is, often make crooked combs beside it. Light yellow foundation is good enough.

NOW COMES the time to put up stoves for winter. Before commencing the job, make a bandage of seventeen thicknesses of cheesecloth, and tie it over your mouth. It will strain out the cross words before they reach your wife's ear. Wash out the bandage when you are through.

THE HONEY CROP in Central Europe, according to the *Revue*, has been more than average, but much darker than usual. The darkness is attributed to the dry season developing more than the usual amount of honey-dew. But as they get about 10 cents a pound for extracted they hardly ought to complain.

Smith had some sections sent by freight;
He ordered them when 'twas too leight,
Some time in June.
Sad, sad, alas! then was his feight:
Next time he will not want to weight;
He'll order soon.

Poultry-netting two feet high has served for several years to keep hens out of our flower-beds. This year we fenced in a poultry-yard of half an acre with poultry-netting three feet high. It isn't a big success. Many of the hens get over it, although their wings are clipped.

"Place hives in cellar a foot or two from the bottom" is the general rule. I suppose it's a good one; and yet for the sake of saving room I have always put the lowest hives close to the cellar bottom, and I never could make out that it made much, if any, difference. Still it may have made more difference than I realized.

IS POLLEN FED TO LARVAL BEES?

OPINIONS OF AUTHORITIES ON THE QUESTION.

A correspondent writes me thus: "Do larval bees, at any stage of their existence as larvæ, eat pollen, or is their food of some other material? I see it is claimed by some that the young bee in the larval state does not eat pollen, but its food consists of a purely animal secretion. Please tell us through the columns of Gleanings what you think regarding this."

I am very glad the correspondent wanted only "my think," for I am not posted in these matters to an extent sufficient to be considered an authority on this subject. However, I am glad this question was brought up, for it will be one of interest to most of us, and it will be a good time during the fall and winter months to discuss the same through the columns of Gleanings, with the editor's permission.

From many careful observations regarding the food of larval bees, I have been led to believe that such food was composed of about two parts honey or saccharine matter, four parts pollen or flour, when used in early spring as a substitute, and one part water, the whole being taken into the stomach of the nurse-bee and formed into chyme, after which it was given to the larval bees in the cream-like form we see it in the cells. Right here I wish to digress a little and give some other observations as bearing on the eating of pollen by the old or hatched bees.

The older readers of Gleanings will remember that, some years ago, I gave a description of how I starved some colonies of bees outright, and others partially so, in trying to make them eat pollen in the fall, and at other times when there was no brood in the hive; and that, so far as I could see, not a cell of pollen was touched. At another time some of the colonies had to be fed, when I again tried an experiment which I had formerly tried several times, which was to see if the bees in hives which had scarcely a cell of honey in them, but plenty of brood in all stages, would live if provided with pollen. As the weather at the time of this latter experiment was so bad that the bees did not fly for several days, it was with much anxiety that I waited to see what would be the outcome of the matter after the honey was gone. The first thing noted was that, as soon as the few cells of honey were gone, the larva was scrimped for food, and the eggs were removed from the cells or eaten by the bees (I incline to the latter opinion), while a little later there was a general eating of the larvæ. A day or two later the sealed drone brood was taken from the cells and sucked dry, while the harder parts were scattered about the entrance and bottom-board of the hive. At this time I noticed the bees putting their tongues together as they do when young bees feed the queen, this thing being continued till nearly all the pollen was used up, which lasted for several days, when it came good weather again, so new supplies were gathered. From these observations I formed the opinion that old bees partake of pollen only in the form of chyme, and that this chyme is prepared only when there is, or has been, brood lately in the hive.

I have thus wandered, to show that pollen can become a factor in our wintering troubles, as I believe, only in connection with brood-rearing, and that, where no brood-rearing is carried on, pollen can have nothing to do with the so-called disease, bee-diarrhea. But, to return.

That the larval bee subsists wholly on this chyme, or creamy food, I think no one will deny; and if from my observations I am correct, the largest element in this food is pollen. As the larva absorbs this food, the grosser part of the pollen forms itself into the yellow streak seen in the larva when taken out of the comb, but most plainly in the drone larva, which streak is finally inclosed by the intestines of the newly hatched bee, and evacuated on its first flight. If I had time it might be interesting to digress here again, and tell how I have found by experimenting that newly hatched bees which have not had a cleansing flight are practically worthless to ship with queens long distances, and that I always avoid, as far as may be, catching such bees when sending queens to Australia and other distant countries, because they are liable to daub the cage and queen with their excrement, or die from over-distended abdomens; but I will not take the time here.

To show that I am not alone in the belief that larval bees eat pollen, I wish to give the testimony of others who incline to a like belief. Gundelach says: "The larvæ are immediately fed by the worker-bees, with a pellucid jelly prepared in their 'chyle-stomachs' by the digestion of honey and pollen mixed with water." Neighbour says: "A portion of this pollen is taken at once by the nursing bees, which are supposed to subject it to some change before offering it to the larva." Kirby says: "With this pollen, after it has undergone a conversion into a sort of whitish jelly by being received into the bee's stomach, where it is probably mixed with honey and regurgitated, the young brood immediately upon their exclusion, and until their change into nymphs, are diligently fed by other bees, which anxiously attend upon them, and, several times a day, afford a fresh supply." Gallup says: "Every bee-keeper ought to know that bees do not feed pollen directly to their young, but it is elaborated in the stomach of the bee, into chyme to feed the young on." Quinby says: "How this food is prepared is mere conjecture. The supposition is, that it is chiefly composed of pollen; this is strongly indicated by the quantity which accumulates in colonies that lose their queens and rear no brood." Prof. Cook says: "The food is composed of pollen and honey—certainly of pollen, for, as I have repeatedly proved, without pollen no brood will be reared." A. I. Root says: "It is supposed that this larval food is pollen and honey, partially digested by the 'nursing bees.' Bees of this age, or a little older, supply the royal jelly for the queen-cells, which is the same, I think, as the food given to very small larvæ. Just before the larvæ of the worker bees and drones are sealed up, they are

fed on a coarser and less perfectly digested mixture of honey and pollen."

In the above I have told what I think in the matter, and given the "think" of several others, who very nearly if not quite agree with me; and I for one should be very much pleased to hear from those who do not agree, but think instead that the larval bee is fed on an animal secretion. G. M. DOOLITTLE.

Borodino, N. Y.

ENGLISH APICULTURE ILLUSTRATED.

A GLIMPSE OF THE MANNER IN WHICH OUR ENGLISH COUSINS MANAGE BEES; THEIR HIVES AND GENERAL APPLIANCES; AN INSIGHT INTO ONE OF THEIR LARGEST BEE-HIVE FACTORIES.

By E. R. Root.

The Hertfordshire *Illustrated Review* for June, 1893, published in England, contains a handsomely illustrated article entitled "A Noble Hertfordshire Industry." As this article describes in a delightful manner English apiculture, the manner in which bee-keepers in that country manage bees, and as it was accompanied by some beautiful half-tone engravings, we at once solicited the privilege of publishing extracts from the article, and at the same time asked for the loan of the plates, all of which was freely granted. We thought this peep into English apiculture would be particularly interesting to our American readers, as it shows just how apiculture is carried on in good old England. The author, Mr. Arthur Smith, after giving the natural history of the bee, the number of writers who had contributed to the subject of apiculture from the time of Virgil's Georgics up to the present time, etc., goes on to describe minutely the large bee-keepers' supply

FIG. 1.—HIVING A SWARM UNDER DIFFICULTIES.

FIG. 2.—DRIVING BEES OUT OF A STRAW SKEP.

establishment of Mr. Thomas B. Blow, in Welwyn, Herts, England. But before giving what he has to say regarding our friend, we wish to call attention to some of the half-tone engravings from photographs furnished by Mr. Blow, showing how the English bee-keeper hives his swarms, how he "drives" them from one skep to another, etc. It may be interesting to our readers to know that Mr. W. B. Carr, a distinguished bee-keeper and one of the editors of the *British Bee Journal*, is the gentleman whose figure appears in these engravings. We take special pleasure in introducing him here right while he is at work among the bees.

The first engraving to which we call attention, Fig. 1, is somewhat interesting—the more so as almost every one of our readers at one time or other has had a similar experience.

The next one, Fig. 2, represents an operation that is much more common in England than in this country—that of "driving bees" from one skep or box into another. In England, straw hives are much more common than in this country. Indeed, in all our travels among bee-keepers throughout the United States, we have never yet seen a straw hive actually in use. They are a rarity indeed, even when empty. But the use of straw skeps in England does not necessarily mean that the bee-keepers of that country are to that extent behind the times. It simply means that those hives are used because of their cheapness. If lumber were as expensive here as it is in England, many of our bee-keepers of moderate means would probably be using straw hives. But the English—at least the poorer classes—use these

largely, we understand, and are very successful with them. Indeed, the most enlightened bee-keepers in this country are coming to acknowl-

FIG. 3.—THROWING THE BEES FROM THE SKEP IN FRONT OF THE BAR-FRAME HIVE.

edge that it is not so absolutely necessary to manipulate frames in the brood-nest as it was formerly considered; for it is now known that many of the operations, such as queening and unqueening, dividing and uniting, etc. (all of which was so ably explained by our friend C. J. H. Gravenhorst, in his article some time ago), can be performed, and very successfully too, without the use of movable frames. Well, our English cousins know just how to do this.

A very common illustration is a straw skep with an ordinary modern super put on top; and those English bee-keepers, we doubt not, produce just as nice and beautiful comb honey as their wealthier neighbor who has movable frames.

But, to return to the engraving where Mr. Carr is driving the bees from one skep to another. Whether he is transferring, or whether he is dividing one colony and giving its surplus strength to another, or whether he is giving the surplus of the first colony to another empty skep, matters not. But for various reasons, English bee-keepers find it very convenient to "drive" the bees from one skep to another. This is accomplished by inverting the skep from which it is desired to remove the bees, and placing on top of it another skep, so that the mouths cover each other. With a series of blows, either with the palm of the hand or with a stick, the apiarist can soon drive them from the lower to the upper one. Mr. Carr is driving the portion of the bees up, and possibly is now watching for the passage of the queen. Indeed, we understand that very often in this way queens are caught.

The next engraving, Fig. 3, shows our friend in the act of transferring the bees from a straw skep to a movable-frame English hive. This scene is, perhaps, more common to bee-keepers in this country, as essentially the same means are employed for getting the bees out of box hives, at least, on to a white sheet. This sheet enables the bees to crawl into the new hive, and gives the apiarist an opportunity to catch the queen if he so desires, as she makes her way along in the general procession toward the new home.

Fig. 4 shows a further stage of the same operation, and Mr. Carr is evidently enjoying the sight of seeing the little fellows tumble over each other in their glee, all turning their heads toward the new hive.

Fig. 5 is interesting, in that it shows the comparative size of the English frame and the typical English hive. Their frame is more nearly square than ours—the Langstroth. It is about the same depth but shorter; and perhaps, for their purpose, it is better adapted to their requirements. It is also interesting to note the prominent position of the Bingham smoker—or, at least, we judge it to be one—one of the old standbys in England. Indeed, as the manufacturer has advertised, it is a standard in every country.

Fig. 6 shows a few of the styles of hives used throughout Europe. There are no American hives in the lot, that we can discover. The oblong straw skep on the left, while having the same outward appearance, and made of the same material as the old straw skeps, has movable frames—said frames being removed by turning the hives upside down—an operation that to us Americans might seem to be very awkward and clumsy; but our friend Gravenhorst, editor of the German *Illustrierte Bienen-*

FIG. 4.—THE BEES RUNNING INTO THE BAR-FRAME HIVE.

zeitung, as well as his own countrymen, who, we understand, use this style of hive largely, succeeds with it very nicely. Indeed, there are many features in that hive to commend it. It has no removable cover; and those who believe thoroughly in the idea of sealed covers get it perfectly in this kind of hive, because the cover is always fast. The top of the brood-frame (or what would be the bottom when the hive is turned upside down) is circular, to conform to the shape of the roof of the hive. Right next to it is a hive that is used largely in Italy. It is in this kind of hive, we believe, that the Italian queens are reared in their native home to be sent over to this country. The general appearance of the hive resembles very much our old-fashioned American box hive. Whether it has movable frames or not, we are unable to say. Just back of it is one of the standard English hives. We believe it is called the Cowan, because its general features were first devised by our esteemed friend, the editor of the *British Bee Journal*. Oh dear! we thought we might be able to tell you something about every one of the hives, but we are "up the stump" already. Those hives that form the center of the group may possibly be the shallow brood-chamber hives that are used so successfully in Germany, or, rather, have been used, for centuries back. The hives at the extreme right, we should judge, are other patterns of English hives—one of them, at least, being the Cowan that we have already mentioned.

FIG. 5.—EXAMINING THE FRAMES OF THE BAR-FRAME HIVE.

Continued.

CHIPS BY E. FRANCE.

BEE-BRUSHES; HOW MUCH MORE EXTRACTED THAN COMB HONEY CAN BE PRODUCED?

We think a brush-broom, made of broom-corn, is the thing. We go to the broom-makers and order them made out of the finest broom straw they have; make them thin, about one-third the thickness of a common brush-broom. Spread them out as wide, and sew them three times across; length about the same. That makes a good brush—light, easy to use—one we can brush fast, and not hurt the bees. It is much

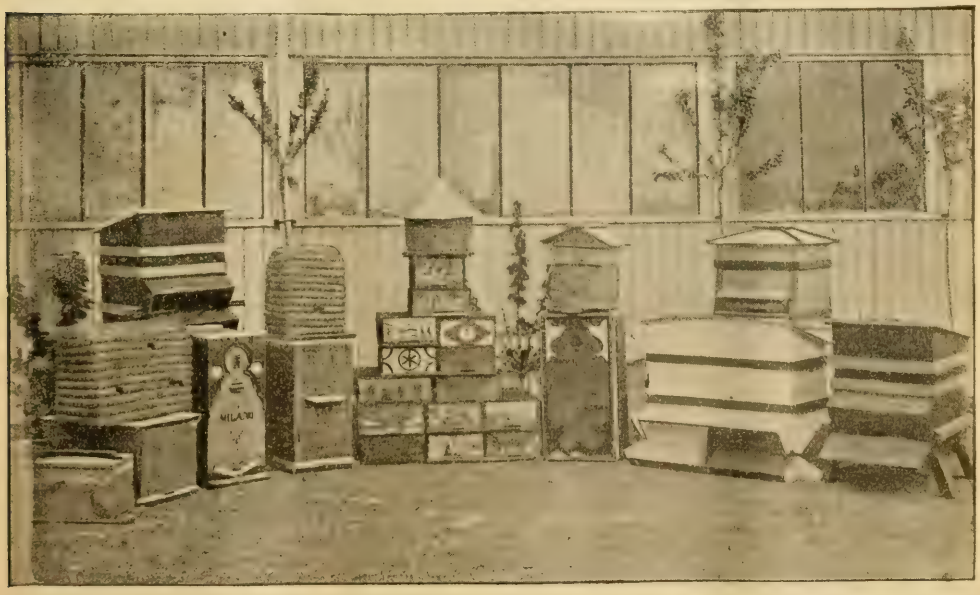


FIG. 6.—GROUP OF ENGLISH AND FOREIGN HIVES.

better than a wing or any soft fibrous substance.

How much more extracted honey can we get from the bees than we can of comb honey? Much depends on the season and management. But I think we can get more than double—in fact, I am sure that is the case; and then, it is less work to handle the bees for extracted honey; and when we get it, it is easier taken care of. Just put it into a good barrel, and then it is ready for market. We can keep it if we don't sell right off; worms won't spoil it, and it is a great deal safer to handle. But, how much more can we get? Let me tell you what happened with us this year. When we extract, from the first hive that is opened in the morning, we take the combs and carry them all into the extracting-tent and shut the hive up without combs. Then we open up another hive, take out the combs, take them to the tent, then take the first set of combs, which will be extracted by this time, and put them into the second hive opened. We leave the first hive empty until the close of the day's work, then the first hive gets the last set of combs. Well, it just happened that we used up one set of combs more than we counted on in making new colonies, and one hive was left empty of combs. The bees were there. Now, when we came again all the hives were filled with honey—that is, the combs were. The yard averaged 25 lbs. of extracted honey to the colony. That empty hive had to build combs for their honey. They did not have 5 lbs of combs, all told—honey, bees, and all making a difference of five to one. It was as good a colony as the average—I think better. How is that, R. C. Aikin?

TWO OR MORE SWARMS IN THE AIR AT A TIME.

When two, three, or more swarms are out on the wing, with no queens among them, they are pretty sure to return to one of the hives that has cast a swarm. The question is asked, "What is best to be done to prevent them from all going into one hive, or on to it, as they can not all get in?" We have had just such cases happen with as many as six swarms at one time. When they began to return, all hovered over one hive and would all have gone there. But when we thought the hive had its share we drove the others away with smoke. Then they soon pitched at another hive. We let as many go in as we thought best, then drove them away from there with smoke. We kept smoking and driving until they were all settled, and were pretty evenly divided. You want a smoker and some one to use it at each hive, or they will get the start of you.

SMOKER FUEL.

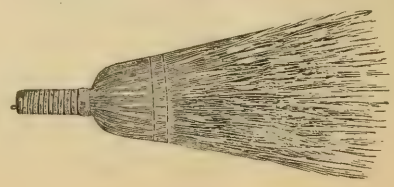
We have used planer-shavings, both pine and hard-wood—old rotten wood, straw alone, straw and tobacco-stems mixed; planer-shavings and tobacco-stems mixed. I have tried almost all things that have been recommended, but have settled down to straw and tobacco-stems mixed. The tobacco-stems that I use are leaf-stems—the refuse from cigar manufactories. We can get all the stems we want for nothing—in fact, we have hauled several two-horse loads of them for manure. The tobacco makes a strong smoke; the straw helps to burn the tobacco. If you use the smoke strong with tobacco, don't use smoke too freely. Just a little will make the bees scamper.

NO USE FOR BEE-ESCAPES.

When the bees are run for extracted honey, can the escapes be used to advantage? Some say yes, some say no; and I say no. I have never used them and don't want to when working for extracted honey. Contrary? No, I am not. There is no one more ready to take to any useful improvements than I am when I am convinced that the thing is useful. I have had something to say on this subject before, and one man who makes bee-escapes sent me some samples for trial. They came during the extracting season; but to use them I should have to make escape-boards, and I could not afford the time during the busy season. They may be an advantage when raising comb honey, but I doubt it even then. I should like to work against time with any man in taking off ten supers of sections of comb honey, he to use escapes and I use smoke. But it is only when extracting honey that I thought to direct my remarks. First, to use escapes we have to be bothered with and have the expense of escape-boards and escapes; then we must put those escape-boards under the supers; bees have to be smoked, super lifted, and board put under. How long will that take, and how many bees will be killed in doing it? I should call it a heavy job to lift those supers off and on again, full of honey. Mine would weigh, super and honey, 50 lbs., most of them more, after the boards are on; then wait awhile for the bees to get out. One man says, "Send a couple of boys the day before the extracting is done, to put on the escapes—that is, for an out-apiary." That is pretty good. Two boys and a team one day cost, say, $4.00. That is nothing, if you think so; but I don't. When the extracting is done, the escape-boards must be stored away until the next time. All makes work, and takes up valuable time. We have in mind the L. frame when we are talking. Now, I will tell what I can do without the bee-escapes. I work my home yard in three-story L. hives. When I was extracting I took my tools, cart, and smoker. I would go to a hive, raise the cover, pry up the honey-board, give the bees a smoke, then scrape the burr-combs off the honey-board, then loosen the combs in the upper set, smoke the bees down again, then take the combs right out, brush the few bees off, put the combs into my carriers on the cart, then take off the upper super, and then smoke the bees down from the second story, and take those combs out, the same as I did the third story; put those into my carrying-boxes on the cart, ready to go to the extractor, 18 frames in all. I was particular to get every bee off. Now, how long does it take to do that? Just five minutes—that is all. I have done it by the watch, time and time again, and can do it any time. Once I got them out and on the cart in just 4½ minutes; once it took me 6 minutes; but some of the boys were talking to me about some other matter, and bothered me. I have timed myself on over 20 hives, and can do it in 5 minutes. Now tell me if it can be done quicker with escapes. I don't want to interfere with any man's business in making and selling escapes. That is not the object of this article; but let the truth be told.

Platteville, Wis., Sept. 18. E. France.

[Our very practical friend Mr. France seems to describe exactly the Coggshall bee-brush, the implement recommended by W. T. Cogg-



shall, of West Groton, N. Y., a prominent extracted-honey man of that State. We have

had some made on purpose, and have been selling them for a couple of years back. To give you an idea of what they are like, we herewith present an engraving which shows it to be an ordinary whisk-brush with the strands slightly thinned out, and selected especially for giving a soft gentle brush.

Friend France makes a strong argument against the use of bee-escapes. He makes his points so clear that one is almost inclined to believe with him that bee-escapes make more work and expense than they save, were it not for the fact that he says he has not tried them, and does not want to. We know that friend France is a practical man, and is ever on the alert for best methods and short cuts; but we are of the opinion that, if he were to apply those same qualities in testing the bee-escape, he might possibly modify some of his conclusions. A large number of quite extensive producers of extracted honey declare quite strongly in favor of the bee-escape. There are times, we think, when the escape will be found to be exceedingly convenient and a saving in time; and there are times when the bee-brush can be used more to advantage. By the way, suppose we have an expression from a number of those who are producing extracted honey, or comb either, for that matter, as to the value of bee-escapes.]

RAMBLE 94.

HOW BEE-KEEPERS TAKE AN OUTING IN THE MOUNTAINS.

In the morning the apiary, several rods above the cabin, was duly inspected. Eighty colonies are here neatly arranged upon terraces, with provisions for much expansion. The honey-flow has not been so bountiful in this locality this season as in other portions of the county; in fact, all along the north side of the valley the honey-yield was moderate as compared with the south side. Parties, therefore, who hear of the wonderful yields of honey in California will bear in mind that the yield is liable to be spotted here as well as in the East. From near the Marshall cabin, ranches devoted to fruit-production can be discerned in nicely watered niches further up on the sides of the mountain. One of these, attained only over a heavy grade which wound around a spur of the mountain, was a most lovely spot; and, the best of all, it was the abode of a bachelor. The cosy cabin was completely embowered in trees; and the water gushing from many springs gave fertility to the soil, and fruits are grown here that can not be grown with success in the valley below. Notable among these fruits is the apple. The altitude of the San Bernardino Mountains averages about 5000 ft. above sea-level, and almost any kind of climate can be found, suitable to almost any kind of vegetation. A certain altitude suits the apple, which can be grown here to perfection.

Our winding way up the canyon was interrupted by only two little incidents—the killing of a rattlesnake and being overtaken by a toll-gate. Toll-roads that I have hitherto traveled upon have a permanent toll-gate, and usually a lady in attendance. This one, however, was built in the form of an Irishman, and moved over the road whithersoever it willed. After observing his old patched overalls and dirty shirt and general forlorn appearance, I suspiciously remarked something about authority to collect toll.

"Be gorra, is it authority yes want? I have the authority of ivery mimber of the corporation; besides, it's meself that's living in the cabin below, hard against the road, and it's a lonely bachelor I am too, so now."

Now, if I had any suspicions before, they were all dispelled when I learned that he was a brother-bachelor; and my comrade and I forked over our six bits toll without another murmur. We went our way rejoicing, and were soon in our new camp in what is known as the saw-pit. In this deep valley there was formerly a sawmill; but where, a few years ago, all was business, the forest is now silent, and there are only a few reminders of the former busy scenes. A goodly portion of these mountains is now set apart as a national park, and they will never be entirely denuded of their timber. We found but little game here, and less forage for our horses; and, after a night's rest upon a bed of sweet-smelling ferns, we climbed out of the saw-pit and leisurely followed the top of the mountains for ten miles, and about noon entered Little Bear Valley.

It was quite interesting to note that bees were at work in great numbers upon the vari-

ous mountain flowers; and as no apiaries were located here, they were wild bees from the rocks and trees. It would be very easy to practice migratory bee-keeping in this region, between the valley and the top of the mountain range. In certain seasons the honey-flow is quite abundant in these higher altitudes, and it comes, too, after the flow has ceased in the valley. The bee-keepers I have conversed with in relation to this migratory matter nearly all think it would not pay to move bees over these troublesome roads; but it might pay to establish a permanent out-apiary in the mountains, and the bee-keeper do the migrating between the two or more apiaries.

There are many oak-trees on the mountains; and during certain seasons there is a great abundance of honey-dew. As this dew exudes from the leaf instead of from an aphis, the honey is not of a bad quality.

In Little Bear Valley there are several sawmills, which give employment to a large number of men. The immense logs are drawn in from the surrounding canyons with a number of oxen and huge trucks. After being converted into lumber it is four and six horse teams

that convey it to the valley below, where the beautiful sugar-pine is converted, to a large extent, into dwellings, and in a small way into bee-hives. At this elevation it is very comfortable working. The days are most agreeable, and the nights cool, almost to a frost. The Little Bear Valley is, consequently, a great resort for campers from the lower and infernally hot and dusty regions of the plains.

Upon our arrival we found Mr. Ferguson had arrived just ahead of us. His family had been occupying a cottage here for several weeks, and he migrated often from ranch to mountain. By the side of his cabin was a neat striped tent, occupied by Mr. Raynor and family. Messrs. Ferguson and Raynor were neighbors in the valley below, and thought it fitting to keep up the intimacy here upon the mountain, as all good bee-keepers should do. The camp bore the odd cognomen of O. de Swine.

The authorities who run the mills had an abundance of well-watered grasslands, and hundreds of cattle and horses were grazing therein. The sloughs from the various springs made fine wallowing-places for swine; and, from the number of pigs of all ages that were roaming at will, it was a healthy place wherein to rear them. O. de Swine, therefore, meant that swine were plentiful all around the campers' tents, and an intolerable nuisance. The feminine portion of the camp had just a few good words for the pigs, for they were great scavengers, and, above all, they were death to snakes, including the dread rattlers. The half-grown swine were also useful for the boys to amuse themselves with. The chief amusement in this line was the throwing of the lasso; and, when the pig was caught by the leg, there was music in camp. We found that California people, while out camping, act much as they do under such circumstances in the far East. Some of the restraints of decorous neighbors are thrown aside, and the practical joker comes to the front. Owing to this there was a smouldering commotion in camp upon our arrival. Our good friends Ferguson, Raynor, and Whitcomb, were deacons in the San Bernardino Unitarian church. Now, as deacons are known to be sober, decorous men, it wouldn't do to say that Deacon Raynor would do such a thing as to stuff a pair of old overalls into the stovepipe that projected from Deacon Whitcomb's cabin. Nevertheless, when Deacon W. started a fire one morning the smoke persisted in filling every corner of the cabin, and driving the occupants all outdoors with more or less tearful eyes. A glance at the top of the stovepipe revealed the state of affairs; and it is said that the worthy deacon, while removing it, made several strong remarks in which milldams and Ed Raynor were more or less mixed. A mild revenge, however, was gleaming in the deacon's eye, and something was expected to happen. That was the state of affairs when we two wandering bee-keepers arrived upon the ground; and when we spread our bed under the big oak-tree in the rear of Mr. Ferguson's cabin we were told to take our guns to bed with us, for we might need them for defense before morning. The advice was taken; but we were not very anxious over other people's jokes, and were soon sound asleep. It must have been after eleven o'clock when we were both suddenly awakened by the report of a gun and the rattling of a score of pans and cowbells. We sat upright, guns in hand, on our blankets, and found ourselves almost in the midst of a genuine charivari. The attacking party of men and women had set out to cut down Deacon Raynor's tent; but our presence upon the picket-line, as it were, and the rapid firing of our guns, with several others from the cabin, caused the attacking party to abandon their designs. Of course, the guns were pointed upward, and no harm done; but the pandemonium was such as to stir up the whole camp. Things quieted down again after a time, and nothing occurred to mar our slumbers until near morning, when a pig tried to get away with the Rambler's shoe.

Sunday dawned light and beautiful; and if our minds were in a frame for worship we should have to do so according to the dictates of our own consciences, and under the big pine-trees, for there was no preacher on the ground to edify us. The three deacons before mention-

ed proposed that a few of the most intimate families each put up a little lunch, and that a few hours be spent in a social way in a beautiful park about a mile up the mountain. The project was put into effect; and when upon the ground, a clam chowder was prepared, with Deacon Whitcomb as master of ceremonies; and, owing to our climb, we mastered the chowder without much ceremony. When the chowder had been duly disposed of, a few hours were spent in social converse, the woods resounding now and then with vocal music, led by Mr. Squires, the gentleman with a guitar and the big green spectacles.

The pine needles beneath the noble trees made a couch upon which to recline; and, but for so much feminine talk, the Rambler would have tried to regain some of the sleep lost during the previous night; but it was out of the question, with a dozen women talking all at once.

That night, when we had all gathered around the big camp-fire in front of Mr. Ferguson's cabin, we concluded that at last on this Sunday night we would have a quiet time. It was, however, hinted that the parties who were foiled in their designs on the tent-ropes would seek revenge upon us for helping to defend them, and that we might be served to a few buckets of water or some other disagreeable experience. It was suggested that we move our bed; but we finally concluded to stick to our post, come what would, and retired quite early. Now, it happens that there is a large number of young men employed in the sawmills, and others in the construction of an irrigating-tunnel. These young men, hearing the shotgun fusillade the night previous, made up their minds to outdo all efforts previously made. Therefore, promptly at 12 o'clock, after Sunday hours, an explosion occurred that shook the solid earth for miles around, and it was followed by another and another. Mr. Wilder and I were enjoying a sound sleep; but with the first explosion our dazed senses realized that a dozen water-buckets might be in the air, and, with one spasmodic motion, my comrade grabbed all the clothes that were over us, and plunged up hill into the bushes. I grabbed what was under us, and went down hill, among the bushes that way. What a racket those mill hands made — Indian yells, gongs, and dynamite! Thirty sticks of the latter were exploded, and every one of them made a report like a ten-pound cannon. It is needless to say that Camp O. de Swine was thoroughly aroused. A half-hour of such a racket exhausted their resources, and quiet again reigned. Comrade and myself perched ourselves on stones, rubbed our eyes open, and found our limbs all intact; got back to our couch with our wraps, and got a little more fitful slumber. Toward morning, another foraging pig, seeing the disheveled condition of our heads, tried to put bangs on us; but instead the pig was banged with a stone. I have thus tried to describe how bee-keepers sometimes spend their outings in California.

A tragedy, and the sad end of a bee-keeper, will be the next theme of the RAMBLER.

CHALON FOWLS AND HIS NEIGHBOR.

SEASONABLE HINTS ON WINTERING, ETC.

"Hold on, neighbor Fowls, I want to pump you a little on bees."

"Well, pump away if you think you can get enough to satisfy your thirst. Neighbor John, what is it?"

"Why, about wintering. Just come and look at some of these swarms, and tell me how you would fix them if they were yours. Now, here is a big swarm in a chaff hive. Would you contract the brood-chamber?"

"No; there are bees enough to cover eight frames heavily. They won't feel the cold any more than a big fat Newfoundland dog."

"Now, here are some combs of sealed honey in the upper story. I guess they'll need some of this. The frames are rather light below."

"How many frames have brood in?"

"Four in the middle."

"Well, take the others out; shove the brood all to one side, and replace the others with frames of honey. There—but, hold on!—those sealed clear to the bottom on the very outside, and those with the lower part unsealed next to the brood."

"But, now, we have changed the brood-nest to one side; wouldn't it have been better to leave it in the middle and put the honey both sides?"

"I think not. During a long cold spell they might cluster on the honey on one side of the hive, and, after consuming it, starve without being able to reach the honey on the other side of the hive."

"Your idea is, to get them started on one side of their stores so they won't miss any."

"Yes, so they'll take a clean sweep, like the old long potato-bugs."

"Shall I put any thing across the frames for winter passage?"

"Yes, some sticks will do, and a piece of burlap or old carpet, and you are ready for the cushion."

"Well, here is another swarm in a two-story chaff hive, that is queenless, and has been so since the fore part of July, when they cast a swarm, and the young queen was lost in mating."

"Did you give them any brood in that time?"

"No; as the top story was full of frames of honey that I was saving for winter stores, the lower story was not easy to get at, and I took it for granted they were all right without looking to see. They are strong in bees, but rather old, as they were all hatched before August. Would you introduce a queen now?"

"No; I think not. Her eggs laid in October would hatch in November—too young and tender for wintering, and the July bees are too old. They are a bad case."

"How would it do to unite them with a late second swarm having a good queen and brood hatching since July?"

"The second swarm is all right as they are. Even if it is not a large one, you can easily give them their winter stores if lacking. But this old swarm is all wrong. They would just be a damage to the young swarm."

"But these bees don't look like old wornout bees; in fact, there has been nothing for them to do for two months."

"Well, I don't know but they would be all right if the swarm was in a normal condition; but they are not; and, if given a queen now, they would wear themselves out, either by unseasonable breeding this fall or too early in the spring."

"So you would brimstone them now and avoid spring dwindling."

"Exactly, and save their winter stores."

"See here, what a nice lot of brood-combs I have that I am going to put in where they are needed."

"Yes, they are a good thing to have—almost too good."

"Ha! ha! ha! *too* good! how is that?"

"Why, they are all solid with honey, clear to the bottom—no empty cells for the bees to cluster in."

"But, won't the bees eat out a semicircle in the lower side before cold weather?"

"Possibly; but, likely as not, they won't, especially as they are not breeding much late in the fall."

"I might uncap a semicircle in the lower part of the combs, and extract before putting them in."

"Yes, I have done that in some cases; but you can accomplish the same object by mashing the capping, and you will then have the honey all in the hive, as the bees will remove it and store it elsewhere. But I must be going. Come over to my place some time, neighbor A., and we'll compare notes again."

"Thank you, neighbor Fowls. I believe I will, for I like this kind of bee-keepers' convention in which all take part."

"Yes, so do I; and think we remember ideas picked in this way much better than if simply read over in a journal. Chalon Fowls.

Oberlin, O.

THOSE OLD BEE-BOOKS.

ANOTHER PEEP AT THE "GOOD OLD TIMES."

In 1796 there appeared in London a bee-book entitled "The Ancient Bee-master's Farewell." It was written by John Keys, and printed in Paternoster Row, as might be presumed. It contains 273 pages the size of this. The print is excellent, and a real relief to the eyes after reading some of the very shiny magazines. The cuts used are the old-fashioned copperplates; and for distinctness and beauty they are ahead of any thing now in vogue. They are not numerous, however. The writer comprises in this book the best conclusions of all the authors whose works I have so far reviewed. This book is marked on the titlepage as "very scarce," and the price is high. Probably that accounts for the fact that two copies of it have tumbled into our sanctum here, just back of where Ernest sits. What lover of old books wants one?

There is an air of freshness about Mr. Keys' style that is pleasing, for it combines good sense with vivacity. How's this?

"The most likely means to establish the bee art, I believe, will not be accomplished without the patronage of agricultural societies."

The idea is, apparently, to have apiculture recognized as a handmaid to agriculture; but the trouble now is, in some parts, to get the agriculturists to see it in that light.

Here is a vigorous and well-deserved slap at the misers of 1796 as well as those of to-day:

"Rural curates might considerably augment their two frequently *niggardly* stipends by the cultivation of bees, and act at the same time consonantly with their clerical profession, as it is an innocent amusement, both healthy and profitable."

It may be interesting to notice some of the terms used by Mr. Keys: "Apiator" is now called apiarist; "bee-herd," one who watches the rising of swarms; "casts," second and third swarms; "duplet," the hive set over or under another; "fume-box," now called smoker; "hackel," or "coppet," a straw covering set over a hive to shelter it; "nadir," the hive which is set under another; "storify"—still used in England, but called "tiering-up" in the United States; "triplet," a stock that has three hives.

One paragraph shows how strangely men sometimes change their mind, and that, too, for the worse. The suffocation of bees had, at that time, been almost universally condemned; but Mr. Keys says, "The suffocation of bees in common [single] hives is not prejudicial to the interest of the owners." This was contrary to his previous principles, prejudices, and practice; but he condemns the practice very severely where tiered-up hives are used. In the single hive, he says, but few bees would be left till winter, and they would die anyhow. Surely we have improved since then.

By a happy coincidence, straw hives are spoken of and shown in another part of this number in a very conspicuous manner. It may be of interest to quote a few words from what Mr. Keys says of them. Of course, they may not apply to those Mr. Carr is using, but yet assist us somewhat. He says straw is a good material, as it is a practical non-conductor of heat, and keeps dry if exposed to the air. Unthrashed rye straw is best, cutting the heads off in a straw-cutter. Bees dislike shaggy straw. These hives are the shape of a half-bushel, 9 inches high and 12 wide in the clear. Three of these are used for each stock.

Mr. Keys says he lost bees heavily in Hertfordshire (see cuts on page 773), but in Pembrokeshire (Wales), near the sea, he never lost one from dysentery in winter.

Just here I discover that Mr. Keys winds up his book with a review of Mr. Bonner's work, which I described in the previous issue. Now, please turn back and see what Mr. B. said about doubling colonies every year for a certain number of years, and then read the following as to what Mr. Keys says:

"On the supposition that bees will increase double every year, and therefore that five hives the first year may increase to ten the second year, etc., I will not dispute; but will there be *double the quantity of honey and wax?* I doubt it; for, supposing the five hives (the bees of them) can collect from the vicinage, as far as their flight for pasturage usually extends, only enough to fill their five hives; the second year being increased to *ten*, the same quantity of flowers will yield only the same quantity of honey, admitting the season similar to the first. I infer, therefore, that the produce will be no more, though double the number of bees. To this we may add (which friend B. acknowledges) that seasons are often bad; rendering hives impoverished instead of increasing, and they often die in winter. The second link of this golden chain being broke, down falls the whole mass of honey and wax appending thereto, and there I leave it.

"No! say its advocates, that is not fair! We can increase the flowers in proportion to the number of bees. Can the cottagers extend their land? or will they extirpate from their little allotment the vegetables of their daily support, to give place for bee-flowers? Will gentlemen (whom B. chiefly addresses) plow up their grass and corn lands, to cultivate such flowers? Surely corn and cattle are of more value than honey! We had better be without honey than bread. But B. has a resource in heath, which covers, he says, *more than half of Britain!* If true, I am sorry to hear it; and hope most part of it will speedily be plowed up for corn, though it should prove the ruin of this *new plan of increasing of bees.* I should sooner prefer Virgil's method of raising bees from a dead heifer, or of Samson's procuring honey from a dead lion.

"I sincerely hope, as Mr. B. has been a practitioner for twenty-six years, he has accumulated a snug fortune, to compensate for his labors and ingenious discoveries. But as his native land so much abounds in white clover, heath, furze, etc., it is wonderful that honey sells at ten-pence and twelve-pence per pound, at Edinburgh. It is also observable that he gives no account of the produce of his own apiary,

and only five instances of other persons of whom he bought honey and wax. To *one*, in particular, he paid five pounds for ONE HIVE, which was weighed in the market-house of Edinburgh; but unluckily he omits the weight or dimensions of the hive. The reader is therefore left to his own calculations. Mr. B., besides his grand resource of flowers, relies on *preserving the bees* of the stocks taken, and uniting them with the stocks left."

Later experience fully vindicates what Mr. Keys says.

The matter of decoy hives has been discussed in these columns. Mr. Bonner claimed it is a fraud to put out empty hives with combs, even in our own lot, to entice bees. Mr. Keys makes the following points, which, I believe, cover the entire matter righteously:

"It is proper here to remark, that Mr. Bonner represents the setting of an old hive of combs in a person's own garden or apiary as a fraudulent practice, as such hives may allure his neighbor's swarms to settle therein. So may a field of good pasture allure his neighbor's cattle or sheep to feed therein. What then! must he not have better pasturage than those in his own vicinity? If strange bees visit his hive, which he set, *bona fide*, to entice his own swarms, should any escape unperceived, and his neighbor's bees take possession of it, *without* being followed by a person who saw them rise, he seems to have a *good title* to keep them; for who can swear *whose* property they were? They should have been better watched. The loss they deserve for their negligence, which I hope will make all bee-owners more careful in this point, if for no other reason. No honest person will refuse the restoration if they can make good their claim. If a person sets such hives with a view of trepanning his neighbor's swarms, it is certainly wicked. The *motive* constitutes the crime."

Medina, Oct. 9. W. P. ROOT.

EASTERN IMPRESSIONS OF CALIFORNIA CORRECTED.

YELLOW OCHER IN CALIFORNIA.

We Californians are given the credit of having a hot climate, one that will melt wax without much trouble. At times some parts of the State are pretty hot; even sometimes here, opposite the Golden Gate, we have a few days of very hot weather. This year we had some glorious days when the thermometer climbed up to the ninety mark. This has been quite a warm summer any way, for we have not had the usual dash of rain in the latter part of spring or during summer. Now, though some twenty or more of our hives are painted with a mixture of yellow ocher and white lead, there has not been the least trouble with the paint making the interior of the hives uncomfortable for the bees. In fact, here in California where the salt air of the Pacific is so destructive on white lead, we want a paint that can resist the action of the atmosphere. This we get when we use the mixture I have just mentioned or one composed of some of the mineral paints and white lead. As far as our climate is concerned yellow ocher is not any too hot in summer for the bees; then in winter and spring it will draw enough heat to make it better and more comfortable for the inmates than any white paint. During the past year I notice that many people have been painting their houses a straw color, ocher being largely used in the mixture. The fashionable style in house-painting hereabouts is to have the body of the house in some shade of straw and the trimmings white. These colors make a building look very pretty.

CUCUMBERS AND HONEY.

The article on page 635 is a little too colicky for me to pass unnoticed. I do not believe that cucumber honey can resemble the orange-blossom honey of the two leading orange States of America, and I say this with all due respect to the opinion of Mr. Cullinan. As the most of the orange-blossom honey of this State is gathered at a time when the bees use most of it in brood-rearing, I am afraid that the denizens of the East have not yet got much of a taste of our honey of the kind I have been referring to. Much of that bearing the name of "orange-blossom honey" is not orange-blossom honey at all. It is a very nice name for canners and adulterators of honey to place on a label in order to make the contents of the package sell the faster.

I am aware that bees do gather honey from the blossoms of cucumbers, for there were great fields of this vegetable raised here a few years ago to supply one of the largest fruit and vegetable canneries in the world, and which establishment was located at this place. Our bees gathered some honey from the flowers of this plant, but it did not amount to any thing, though, as I have said, there were big fields of the vegetable right near us. If cucumbers were great honey-yielders this county ought to be as great a cucumber-honey county as Ventura County is a bean-honey-producing locality. I think there are more cucumbers raised in this county than there are in any other county in the United States; for nearly all of these vegetables that are consumed in San Francisco and on this side of the bay, as well as all that are used in the pickle-factories in three counties hereabouts, are raised in this county. Perhaps if the vegetable yields much nectar the bees do not gather much of it, as they may be afraid of taking cholera morbus. Perhaps Dr. Miller knows something on this point. What say you, doctor?

CRACKED COVERS.

I have not been troubled with the covers of your hives warping, as some of your patrons have been; but I find that a few crack badly. It is possible that your Eastern pine is not adapted to our climate. I think I will substitute some of our native redwood covers for the ones that came with your hives. We can get such nice wide boards here, free from knots, at a cheap price, that I think it better to have covers that project over the edges of the hives on all sides. This your covers do not do, I am sorry to say.

CALIFORNIA HAY.

Your remark about barley, etc., on page 638, is not correct, please let me say, so far as the kind of hay that is used in this State is concerned. You speak of its being the great hay crop of California. I know not where you got your information; but I do know that the hay that is used, almost to the exclusion of all others, is oat hay. I have traveled nearly all over the agricultural portion of this State, and I have seen very little barley hay raised. Barley is cut for hay only where the land is too dry to raise any other cereal. It matures earlier, as is well known. All through Central and Northern California, which is really "Agricultural California," and where the great bulk of our population is, we find the great wheat-fields of America; there, too, is grown nearly all the hay that is used to supply the markets of the big cities in the vicinity of the bay of San Francisco. Large quantities of hay are used to feed the horses in those cities. As I have said, this hay is chiefly oat hay. The best hay that goes to market is a mixture of oats and wheat. This sort of hay is cut when the

grain is in the "dough" state, and is raked into winrows as fast as it is cut. A day or two later it is cocked. Some farmers let it remain a couple of weeks in the cock and then stack it, where it may remain several weeks ere it is baled. Other farmers do not stack it, but carry it direct to the hay-press, and bale it without sweating it in the stack. Oat hay brings about $12 a ton.

We have a fine hay that is used mostly as a fodder for neat cattle, but seldom for horses. It is a native oat. In the early days of our history it was nothing to ride for days through our valleys and rolling hills through the wild oats, the tops of the grass being above the tips of the horses' ears. Strange as it may seem, this native oat vanished before the foot of the new comers. It is seldom that a person meets with a field of this grass nowadays. Still, there are some places where it is grown extensively. Where it is raised, the farmer does not have to sow the ground with its seed, as it is self-seeding.

There is another sort of hay we have, and one that is largely grown, and profitable alike to the farmer, stock-raiser, and the bee-keeper. It is alfalfa. As you are aware, several crops are harvested a year. It is grown almost entirely upon irrigated land—the great alfalfa districts being in Kern and Tulare Counties, in the upper San Joaquin Valley. I am sure there is a great deal more alfalfa hay raised than there is barley hay, and yet you have got the idea that the latter is our chief feed for horses and cattle.

It seems to me that in one of your interesting "Notes of Travel," published some few years ago, you spoke of the coarseness of our hay. True, we have some hay that is coarse at times; but the most of the oat or wheat hay that one sees in our hay markets is not so coarse. It is not as fine as the timothy or clover hay of the East. Withal, we have what appears to you to be little better than straw. We raise the *fastest horses in the world* upon this very "straw." It seems strange, does it not? Our hay, with the exception of alfalfa, is raised without irrigation. If we were to irrigate our hay-fields the stalks of hay would be as large as bamboo fishing-poles.

WHERE DIFFERENT CALIFORNIA CROPS ARE GROWN.

The average Easterner, when he thinks or talks of California, does not consider that, as a general thing, different sorts of crops are grown in different portions of the State. The only exception to this may be said to be in regard to oranges, which are generally believed to be grown in the lower part of the State. This fruit is grown as far north as Mt. Shasta, in the extreme northern part of the State, some of the finest orchards being in some of the counties above Sacramento; yet the great orange district is in the lower part of the State.

Grapes are grown all over the State with perfect success; yet the products differ in this way: The finest dry wines are raised in the vicinity of San Francisco; that is, 40 miles to the north, south, and east of that city. This radius may be extended 100 miles to the east and south, and a good deal more north. From the Fresno district south, the best sweet wines are produced. The best raisins are grown in the Fresno country, though excellent raisins are grown in the more southern and even in the northern counties. The great French-prune district is in lower Alameda County and the whole of Santa Clara County.

The great bean district is in Ventura County. The honey region is in the southern counties, as is pretty well known; it is there, too, where most of the yellow corn is raised. The vast onion-seed fields are in Santa Clara County; the hop-fields are in Lake and adjoining counties in the north-central part of the State. Cherries come to the greatest perfection in Alameda, Santa Clara, and Solano Counties. They can not be grown with any degree of success in the southern part of the State; while, on the other hand, apricots do better in the southern counties than they do in most of the counties further north. The finest peaches are raised up in the foothill regions in some of the old mining counties. The great strawberry-fields are in Santa Clara and Santa Cruz Counties, where they are irrigated by means of artesian wells. The growing of English walnuts is mostly confined to the lower counties, while almonds are mostly grown in the counties adjacent to the bay of San Francisco or those bays running out from it on the north. The Livermore Valley, in Alameda County, is said to produce the finest almonds. The best apples come from the Sierra Nevada foot-hills, above Sacramento County. Though potatoes are grown abundantly about the bay of San Francisco and on the islands of the San Joaquin and Sacramento Rivers, still the finest potato country is to be found in Humboldt County, while Marin is not far behind it. These counties lie north of the metropolis. The great dairy ranches are along the coast above the Golden Gate. The sheep ranges are to the south.

This list could be extended; but the above will suffice to show that certain localities seem to be better adapted to the successful growing of certain products than others. While this is so, still a crop that may be raised in one part of the State may be found growing in every one of the counties of California. Dates have been known to ripen in San Diego as well as in Solano County, which is well north of the Golden Gate. Oranges may be seen growing and fruiting in almost every part of the State, yet they do not do well for general purposes except throughout the celebrated "orange-belt" of the south, and that in the northern section already referred to. W. A. Pryal.

North Temescal, Cal., Aug. 28.

NATIONAL GOVERNMENT APICULTURAL STATIONS.

THE OTHER SIDE; AN ANSWER TO W. C. FRAZIER, RELATIVE TO THE SUBJECT.

I should like to say a few words in reply to W. C. Frazier, page 700. It seems to me this government has all the expense it can well bear, without further burdening it with the expense of swarm-catchers, self-hivers, non-swarming attachments, etc., which are not only as a rule useless, but an expensive nuisance to the practical apiarist. I would not give a dollar for all this class of articles ever manufactured. If bee-keepers would let Nature take her course, as far as practicable, I think the financial result would be quite different, aside from saving the expense of these patent humbugs, which are manufactured, not for the advancement of our chosen pursuit, but for the money there is in it for the patentee. What the government has done for the farmer is for the protection of domestic animals against contagious diseases, which is perfectly right, and of general benefit, not only to the farmer but also to the apiarist. It takes no action as to the kind of barn, saddle, harness, collars, pads, or other fixtures best suited to the proper manipulation of our domestic animals. As to the number of pounds of honey consumed in a year, it depends on the strength of the colony, and especially the locality. The

number of pounds of honey required to produce a pound of wax would depend on the honey-flow, the same as feeding corn to a hog produces fat. If fed scantily, the gain will be very slow; but if fed all they can eat, the gain will be larger in proportion to the feed. As to workers removing eggs from one cell to another, or mating with drones, or drones from such, or mismated queens, fertilizing queens, or the degeneration of inbred bees, if correctly answered would only satisfy our curiosity without bettering our financial condition a particle. The amount of foundation to use depends also on the honey-flow, the same as the wax production. If you wish to decide the question as to the difference in amount of honey production, take two colonies, of the same blood and equal strength, and perfect queens. Run one for comb honey and the other for extracted, and I think we can satisfy ourselves on this point. The fact of our knowing so few things is due largely to our depending too much on others; or, in other words, jumping at conclusions of ourselves and others. Let us prove all things, and hold fast to that which is good.

THE VARIATIONS OF E. E. HASTY'S SECOND SWARMS.

I should also like to say just a few words in regard to the variations of second swarms as recorded by E. E. Hasty, page 700. As to the seconds cast on the 6th, 7th, and 8th days, I would say that the first swarm is delayed either by bad weather or else some trouble with the old queen; those on the 9th are natural, and, I believe, in accordance with the rule; those on the 10th to 17th are those where the first swarm issued ahead of time, varying from one to eight days. The better way, I think, is to avoid second swarms, and not be bothered with this record. I had over 30 swarms this season, and no seconds, without cutting out queen-cells. I had a honey-crop of 4600 lbs., extracted, from 32, spring count. ELIAS FOX.

Hillsboro, Wis., Sept. 28.

[There is much of truth in what our correspondent says. We should take account of Nature's ways, and then adapt our appliances so far as practicable. As to the national government testing appliances, we quite agree with him. For the government to indorse one manufacturer's goods over another's would hardly be just the thing, although the goods of the first mentioned were actually better.

Perhaps more discussion on all these questions may not come amiss.]

WILL TWO QUEENS FIGHT?

DR. MILLER DEFENDED, ETC.

I see in the Sept. 15th issue of GLEANINGS that Dr. Miller has been taken to task for the statements he made in Stray Straws, to the effect that he never saw two laying queens fight. Now, I hardly think that Dr. M. has lost the good opinion of the bee-keepers up here (at least not all of them), regardless of the fact that he never saw two laying queens fight. Perhaps the circumstances under which the queens were put to test, that Dr. Miller witnessed, were not the best to make them fight. Queens that have been caged for a day or two are less liable to fight than queens taken direct from the hives. Virgins one day or more old are as liable to fight as laying queens. Dr. M., to sustain his claim, asserts that he has no less than three colonies with two queens in them; and, by his article, I take it for granted that he did not put them together, but that *nature* brought it about. Bless the doctor, he wouldn't expect either queen to show fight in such a case, more than he could expect a honey-flow at Christmas in his locality. Say, Dr. M., suppose, when you unite nuclei, you watch and see how long two queens will remain together.

AN EXPERIENCE WITH FERTILE WORKERS.

Along in midsummer I had a colony that lost its queen. I can not say positively, but I think it was presumably from old age. The bees, at any rate, built queen-cells, and therein were deposited eggs; and in due time there were two capped cells in the hive; but when, within two or three days of maturity, the cells were destroyed by the bees, I in turn gave them a caged queen-cell; but I suppose the queen was killed on emerging from the cell. I again gave them a caged cell, which hatched, and the queen was allowed to live for about four or five days, when she must have been killed, as I could not find her.

At about this time fertile workers made their presence known by eggs appearing in the cells. I now left the fertile workers alone until the bees began to cap the cells, when the combs the cells were on were taken from the hive, and three combs with bees and brood were put in their place, with a laying queen. The fertile workers were shaken off their comb in front of the hive, and left to unite with the bees having a fertile queen, which they did without any fighting, as no bees were killed through the union. Four days afterward I examined them and found the fertile queen all right and laying; consequently I supposed that the fertile worker was no more in the land of the living. In two more days the queen was removed, and a caged queen-cell was given the bees, which hatched, and the queen was allowed to live three days, when the queen was killed by the bees. Now comes what causes me to write this article on fertile workers. I soon found that a fertile worker was present, and had been from the time I united the bees with the fertile worker and the bees with the laying queen. Of course, the fertile worker was never killed, but continued laying right along with the laying queen. This I can prove, as drone brood was scattered miscellaneously over the combs, in the ratio of one-third drone-cells to two-thirds worker. Now, why did the bees harbor a fertile worker when they had a good laying queen? This latter part overthrows Dr. Miller's plan of giving pulled virgins to colonies having fertile workers, but seems to be in harmony with his experience as regards laying queens not showing fight.

I see there are some reports quite discouraging in GLEANINGS of Sept. 15th, even from the good old State of Ohio. The honey crop in my section has been somewhat better than usual this season. My colonies run for extracted have yielded about 210 lbs. each, and for comb honey 165 lbs. The queens in these colonies were reared from one of Doolittle's breeders, and crossed with drones from leather-banded stock. There is no linden, in my locality, the honey being gathered mainly from white clover. We also have an abundance of clover growing along the roadsides and ditches. This is the kind which A. I. R. and friend Boardman have been accused of going out at midnight and scattering the seed along the roadsides. Of this there has been more this season than any year that I know.

Along in the spring Dr. Miller made some remarks about dandelions opening early. Well, they have not only blossomed early in my locality, but they are still open—that is, about a square rod of 'em. They have been in blossom a few days only, while it was warm enough for

the bees to work on them, in which time they gathered pollen, and no doubt honey as well.

Bellevue, O., Sept. 28. H. G. Quirin.

TWO PROLIFIC QUEENS IN THE SAME HIVE.

A PECULIAR CIRCUMSTANCE.

Perhaps a very recent experience of my own in this particular will be worth relating, as it occurred under circumstances a little out of the ordinary, and will serve as additional proof, did he need it, of Dr. Miller's position that such exceptions to the rule are by no means rare.

Some untested queens had been ordered from Rouse & Co. early in the summer; but they had had so brisk a trade that it was found impossible to send mine till the last week in July, the queens arriving on the 28th, and were introduced on the 29th. The time happening to be under conditions about the very worst possible for introducing, and robbers rampant, I decided, after introducing all but one very yellow queen, by the ordinary plans, to make a "dead-sure" thing of her safety by making a nucleus of sealed and hatching brood, according to the plan laid down in the A B C book, page 157, and which I had always been curious to see worked out. She was accordingly turned loose on three such frames, after every bee had been brushed off; and during the process her escort all escaped, so that the beginning of this colony was a queen *absolutely alone* for a few seconds, in a hive containing mostly sealed brood in three frames between division-boards. Young bees hatched rapidly, of course, but it was some little time before there seemed to be much evidence of a community interest or acknowledgement of the one sovereign authority. Nor was it all as "plain sailing" as at first supposed. The weather permitting it, the hive had been placed on the stand where it was to remain, and ants took possession, killing young bees and worrying the queen. Getting rid of this nuisance, and placing the hive on legs in cans of water, things progressed satisfactorily, and from time to time brood was added—a small entrance, of course, having been opened up about the fourth day. About this time the queen was known to be laying; bees were going to the fields, and in a short time there was a fair-sized colony with six frames and a division-board; honey was beginning to come in, and, as the frames were well covered with bees, the entrance opened half width, and was well defended. The hive was not looked into till the 24th of August, when a dead queen was found in front of the hive. On looking in, queen-cells were seen, in different stages, one or more having the appearance common after the young queen has crawled out, and drones were nearly ready to hatch.

It will thus be seen that preparations for swarming had begun very early in the life of this colony, and escaped my notice until the dead queen was found; but I can not be positive in regard to the source from which these preparations to swarm began, because both drone and worker eggs or young larvæ might have been present before the new queen laid an egg; yet I feel sure the eggs that hatched drones and queens were all hers, from the fact that the drones (which required the longer time to hatch), when they began to fly, proved to be of the beautiful solid golden color claimed for R. & Co.'s golden queen's progeny, and entirely unlike any ever before seen in my apiary.

The queen-cells having been cut out and used, and more room given, no further attention was given the colony, other than a glance in, once or twice, to make sure the queen was there and laying. The disposition to swarm was apparently over with.

Sept. 20 a drone-laying queen was discovered; and, to save the colony, after killing the queen I went to the hive above mentioned, to get eggs for them from which they could raise a queen, expecting to have to help them along with brood from other hives, or at least get them started with a new queen before cold weather. The first frame lifted had a queen on it, and it was put back, one frame skipped and the next held up, when there, too, was a queen. Holding the frame in one hand I lifted out again the first one, and there was no mistake. With a frame in each hand, and a queen on each frame, I saw a better thing for my queenless colony than eggs and the long delay before workers could hatch. Knowing the old queen at sight, I put her back and at once introduced the other into the queenless colony, and she began laying at once, proving, if her shape had not (the full rounded abdomen of a laying queen), that both mother and daughter had been laying together in the other hive. The mother in the artificial colony is very prolific, and, like the others purchased, was untested, hence young. Why did this colony want to swarm this late in the season? Did the artificial formation of it instigate the impulse? Who "raised the row"—the queen or those young white baby-bees? Why did the queen permit one daughter to live and lay after one or more had been killed? If both had been left in the hive, would swarming have taken place next spring without further preparation? These are some of the questions that arise which, may be, that "experiment station" will solve and answer. C. P. Coffin.

Pontotoc, Miss., Sept. 26, 1893.

FLORIDA.

SELF-SPACING FRAMES; BEE-ENEMIES, ETC.

This is a decidedly off-year for honey, around Orlando. The bee-keepers here report little or no surplus gathered, and many colonies have been destroyed by worms, ants, etc., which loss, I suspect, is due mainly to short stores and loss of queens. However, my own bees are in excellent shape. I have lost no colonies, and all have sealed stores, except two or three. From 24 colonies, spring count, I have taken to date about 600 lbs. of honey—500 lbs. of which was extracted, being an average of 25 lbs. per colony, which I consider, under the circumstances, a most gratifying result. My present number of colonies is 37.

THE BEE-HAWK.

I have found a new and destructive enemy to the bee; and that is, the bee-hawk. These pirates come by the hundreds around the apiary, late in the afternoon, and catch and swallow the bees in great numbers. I have had to arm with paddles, and open war upon them.

A SUGGESTION FOR SELF-SPACING FRAMES.

If those who object to self-spacing frames would try having the projections, or spacing-strips, in *one piece* attached to one side of the frame, instead of projecting on both sides of the frames, I am satisfied they would find less cause to complain of glue, by reason of the angle being less acute, the connections being more at right angles, which prevents them from being so badly propolized.

PINKVINE A HONEY-PLANT.

I send you by mail a specimen of the *Antigonon leptopus*, or pinkvine, the queen of vines, unrivaled in grace and beauty. The vine covers 80 to 100 square feet, all this year's growth,

the top a perfect mass of pink blossoms; and over this sea of bloom the bees swarm by tens of thousands, from morning till night, for six to eight months in the year. Its attraction for the bees is wonderful. I have stood, with watch in hand, and counted 27 bees in 5 minutes seeking nectar out of the same flower. I have done this several times, and found the average to be a fraction over 5 bees a minute. I believe this is ahead of all other records of the kind, and marks the *Antigonon leptopus* as foremost among honey-plants, in point of attraction for the bees, by the bountiful secretion of nectar and duration of period of bloom.

JAMES K. DUKE.

Orlando, Fla., Sept. 22, 1893.

[You will find the bee-hawk mentioned under "Enemies of Bees," in the A B C of Bee Culture, and also in "Cook's Manual." We do not often hear of their depredations, however, and we understand they can easily be driven away.

Regarding the self-spacing frames with projections on one side, we would say that we advertised them for sale, but there was very little call for them. The trade is wholly for projections on both sides. There is no difficulty in handling either kind, so far as propolis is concerned, when you once know how; and the many advantages they possess over the non-spacing kind place them clear at the head.]

CAN HONEY BE CORRECTLY TESTED?

EXAMINATIONS BY DIALYSIS, ETC.

The adulteration of honey has for a long time been a question of great interest to all bee-keepers, and a ready means of detecting it, is anxiously looked for by all those having the interest of the industry at heart. In the *American Bee Journal* of July 4, page 105, Professor Cook gives a summary of the conclusions he arrives at from the experiments made under his directions at the Michigan Agricultural Experiment Station. The Bulletin 96, "Honey Analysis," contains experiments made with about 60 samples of honey by Prof. H. W. Wiley, of the Agricultural Department at Washington, by Prof. M. S. Scoville, of Kentucky Agricultural Experiment Station at Lexington, and by R. C. Kedzie, Chemist at Michigan Agricultural College. These experiments show that professional "chemists can easily distinguish honey adulterated with glucose," and that they detected two samples which were adulterated "purposely."

This is certainly so far very satisfactory; but had the analyses been made from some of the spurious honey, said by some to be on the market, and the source of the adulteration detected and exposed, it would have been much more to the purpose. Chemists are, no doubt, able by laborious processes to detect adulteration in almost any thing; but what bee-keepers, and those interested in pure honey want, is some ready method by which a person of ordinary intelligence can detect adulteration for a certainty, never mind the source, when this is ascertained; then the chemist can be applied to for confirmation and details.

EXAMINATION OF HONEY BY DIALYSIS.

Dr. Hænle, of Strasburg, has experimented with various samples of honey, and has given the public the benefits of his research. He describes the process, and the apparatus required, and appears to think that dialysis is a sure and simple method by which the purity of honey can be ascertained. That the process is simple will readily be conceived when we find his fee was only two marks (50 cts.) for the analysis of a sample of honey sent him. This honey had been purposely adulterated, and in his report he says, "There is an adulteration of 23 per cent with glucose." This was practically correct, I believe.

But chemists generally do not accept his process, as will be seen from the following, taken from the *Chemiker Zeitung:*

REPORT OF TH. WEIGLE, OF NUREMBURG, ON "THE DIALYTIC EXAMINATION OF HONEY," PRESENTED AT LINDAU AM BADENSEE, AUGUST, 1893, AT THE ANNUAL MEETING OF THE ASSOCIATION OF BAVARIAN REPRESENTATIVES OF APPLIED CHEMISTRY.

Weigle concludes from various experiments conducted by him, in an apparatus made at Strasburg, precisely according to Hænle's instructions, with careful observation of the conditions given by the latter in his book, that the dialytic examination of honey is applicable only in cases in which there has been considerable adulteration with impure starch syrup (glucose); and even then, only when the absence of coniferous honey is assured, as this behaves dialytically in essentially the same manner as honey adulterated with impure starch syrup. Additions of cane sugar, or invert sugar, as they occur at present in the market under the names of fruit sugar (*Frucht-zucker*), or honey sugar (*Zucker-honig*) are not to be detected by dialysis.

A quantitative determination by dialysis, of the extent of the adulteration with impure starch syrup, is, according to Weigle, quite impracticable.

Weigle concludes that the dialytic process does not, under any conditions, possess any such decided significance as attributed to it by Hænle—a view which was unanimously joined in by the association.

After this report of Weigle's, and the consensus of opinion expressed by a large body of the Bavarian association, experts in applied chemistry, bee-keepers can hardly accept Hænle's process as conclusive; and the simple plan by which we can with certainty detect spurious honey has not yet been made plain to us.

JOHN M. HOOKER.

Philadelphia, Pa., Sept. 15.

[We think there is a simple way of detecting glucose; see GLEANINGS, p. 103, for particulars, this year; also pages 254, 275.]

WATER-CURE, GRAHAM BREAD, ETC.

HOW TO MAKE GENUINE GRAHAM GEMS.

I have often felt a desire, as the years have come and gone, to thank you for the outspoken words of GLEANINGS in behalf of water-cure. It is nearly fifty years since Henry C. Wright, an American, a public speaker and a co-worker with William Lloyd Garrison, lost the use of his voice. He placed himself under the care of Pressnitz, the founder of water-cure, at Graffensburg, Germany. During his stay at this wonderful cure (from which he returned home with health and voice restored), Henry C. Wright wrote letters weekly which were published in *The Liberator*, the paper then published by the immortal Garrison. In all the years since the initial education of the American people in water-cure by those letters in the *Liberator* I have taken a quick and increasing interest in it. Water-cure implies letting alone all manner of pills, big and little, as well as all sorts of bottle stuff. It embraces good air and wholesome food.

I should like to tell you about graham flour. It is the product of the whole wheat. Dr. Graham, in "Science of Human Life," devotes forty pages to bread-making, where he tells the reasons why the whole-wheat flour is better. That which is made at Akron, and sold by grocers everywhere, is not to be compared with

real graham flour. The real graham flour will not keep long. Better to procure it 25 lbs. at a time. Have the miller catch it as it comes from the roller. The graham by the roller process is vastly superior to that by the old way. Try this and verify my words, and then publish good words for the plain graham flour in every issue of GLEANINGS for a year.

TO MAKE GRAHAM GEMS.

Take graham flour, and water sufficient so that the mixture will flow very freely; add a tiny pinch of salt. Have the cast-iron gem-pan on the top of the stove, and made very hot; grease with a swab and a bit of butter, and quickly fill the gem-pan with a spoon, and place from the top of the stove in a hot oven. Serve hot.

TO MAKE GRAHAM RUSK.

With water and graham flour make a pretty stiff dough; knead, and roll as for biscuit; cut out with a cup, or slice in strips; bake. These served warm are preferred by some persons to the gems. But to make the rusk, after baking, place in a warm oven, not hot, for half a day, or until all the moisture is dried out. Now break these dried crackers or strips in pieces, and grind in a hand-mill. Serve with cream and milk. J. CADWALLADER.

North Madison, Ind., Sept., 1893.

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

HONEY-DEW IN IOWA.

After looking GLEANINGS for Sept. 1st over, and seeing no report from this part, nor from the State, and also your statement on page 668, Sept. 1, that there were no reports of honey-dew in the country, I thought I would try to put you right on this question so far as this section is concerned. I will give a short report of my own apiary, which is about an average of the country up and down the Cedar River for 25 or 40 miles. The timber skirting the Cedar River is about 10 to 12 miles wide. I live just on the edge between prairie and timber. The bees came out of the cellar all right, for that is the way most are wintered here; but the spring was cold and wet. I lost 23 out of 75 by spring dwindling. Clover came out nice, and made a big growth, but no bees worked on it. They commenced on honey-dew as soon as the leaves were half-grown—burr-oak first, then on hickory and all kinds of trees. I got 2 bbls. of honey-dew, almost as black as tar. They stuck to the honey-dew till linn came in bloom, then went to the linn and clover for ten days or so, from which I got 2 bbls. of pretty fair honey, and this is about the ratio of all the honey in this section. I sold my 4 bbls. at 5 and 6 cts. to cracker-factories. We have had four seasons before this, so we are not feeling very rich. The above amount of extracted honey was from 45 stands, spring count. The other 7 ran for comb honey. ROBERT QUINN.

Shellsburg, Ia., Sept. 4.

PRESERVING BROOD-COMBS FROM MOTH.

I see persons advising us bee-keepers how to preserve combs. I will tell how I keep them. I take a box or empty hive, and nail common door-screen on the bottom. I then take a crate or another empty hive, and tack wire on top, the same as on the bottom of the first one; set one on top of the first one, and so on as high as you can, then put on your top box. If your joints are good, the moth can't lay their eggs in your combs. Fill with combs, then put the boxes in a dry place; set the first box on four little blocks. The air will keep your combs dry. I have combs that are just as nice as when made, that I kept for three years. If there are any moth-eggs laid in combs you will have to brimstone them or the eggs will hatch.

Moulton, Ia., Sept. 3. S. S. BUCKMASTER.

[Combs kept in a tight room or box, after a good winter freeze, will be perfectly safe. There is no excuse for moth-worms getting into combs out of the hive.]

THE OLD-FASHIONED HOFFMAN FRAMES.

In the A B C you mention, as an objection to the straight-top-bar Hoffman frame, the fact that bees will propolize it more than the Simplicity, since it always rests in the same place. Why not occasionally change the division-board from one side of the hive to the other? This will move all the frames, and give no more opportunity for sticking propolis than with the loose frames. J. A. RESSLER.

Ronks, Pa., Aug. 30.

[This would help the matter, but not obviate the trouble entirely.]

DATE OF SECOND SWARMS.

I see the experience of those keeping a record is requested as to the length of time between first and second swarms. The past season, of those which I have a clear record, one sent a second swarm in 5 days; one in 7 days; one in 8 days; one in 9 days; one in 10 days; two in 12 days; one in 17 days, and in looking over my record for three or four years I find but little if any more uniformity. O. B. BARROWS.

Marshalltown, Ia., Sept. 18.

MATING THE SECOND TIME.

On page 705 of GLEANINGS for Sept. 15 you ask if others have observed queens mating more than once before laying. I have had one or two cases of that kind, but it was always where the queen was balled on her return to the hive; and their struggles to free themselves from the ball of bees may have caused them to mate a second time. I have also noticed that some queens thus balled became worthless, and were superseded before the close of the season. FRED BECHLY.

Searsboro, Ia.

REPORTS DISCOURAGING.

POOREST SEASON IN 14 YEARS FOR JOHN NEBEL & SON.

This has been the poorest season for bees that we have ever had in all of our bee-keeping experience, which has been fourteen years—not a single pound of honey nor a swarm, and we have had to feed to get our colonies strong enough for winter. We lost 80 colonies by spring dwindling in April and May. Another year like this, and we shall be out of bees.

JOHN NEBEL & SON.

High Hill, Mo., Sept. 26.

REPORTS ENCOURAGING.

GOOD FALL CROP.

Our fall honey crop has been excellent; all the surplus boxes were filled in three weeks. One of our farmers said to me, "This has been a poor year for honey." I afterward found out

he had never looked into his hives. I bought them for $1.50 each. J. HARRY WILSON.
Orphans Home, Texas, Sept. 25.

7000 LBS. OF HONEY FROM 55 COLONIES, SPRING COUNT.

I had 55 stands last fall. I lost five during the winter and spring, and had two more that lost their queens so they did not amount to any thing, and were of no use at all. That left me 48 stands. I went to work with them in the spring to get them in shape for business, as I partly expected a good flow of honey. I put sections on one hive, and extracted from 47. I got in all 7000 lbs.—4000 lbs. of clover and 3000 of basswood, all as fine honey as I ever got in my life. There is no one around here who got so good an average as I did, nor any thing like it. I think it is all in the way that I managed my bees. They now number 63 stands, all very heavy with honey for winter. MONT WYRICK.
Cascade, Ia., Sept. 26.

ANSWERS TO QUESTIONS

FROM BEGINNERS.

A. P. D., of Texas. Your question is answered under the initials "H. C. R.," below.

S. W. P., of Maine, asks whether bees can be transferred in the fall. *Ans.*—Any time when bees can fly; but it should be done early enough so that they will have time to patch up the combs and take in a little extra syrup if it should be necessary.

H. G. S., of New York, wants to know whether it is advisable to crowd a ten-frame colony on to six frames. *Ans.*—If the colony is good and strong, we would not reduce the ten-frame brood-nest to less than eight frames nor an eight-frame to less than six.

C. L. W., of Pennsylvania, has a considerable quantity of honey-dew in his combs, and wants to know whether it would be safe to give it to his bees for winter. *Ans.*—We would risk it, because the majority of the reports show that bees have wintered successfully on such inferior stores. Of course, it is safer to give the bees sealed clover or basswood honey, or, better still, sugar syrup that has been fed in the early fall.

H. C. R., of South Carolina, asks what causes honey to sugar in the hive during midsummer. *Ans.*—We can not explain the reason, only that we know that honey from some sources has a peculiar habit of candying almost as soon as gathered. If H. C. R. could tell us the source whence it comes, we might tell him more about it. He also asks, further, how to get this candied stuff out of the combs. There is no practical way that we know of. We would set aside the combs containing such honey, and use them for supplying bees with stores when they require it. In your locality you will, quite likely, require to use them before next summer.

R. H. S., of Ohio, has several colonies in his apiaries that have only virgin queens, and asks whether it would be advisable to replace these, or whether, if left, they will be fertilized next spring. *Ans.*—Virgin queens left over during winter are sometimes fertilized the following spring; but the cases are rather rare; and in many of the instances when it was thought that such delayed mating took place, the queens were actually fertilized the previous fall; but as it was past the time for egg-laying, they passed for only virgin queens. Referring particularly to the question, we would recommend that the virgins be removed, and laying queens be inserted in their stead. The latter, at this time of year, can be bought for a trifling sum.

E. N. R., of Michigan, asks what sort of packing material we recommend, and whether it would pay to send out into the country when he has planer-shavings or forest-leaves in abundance on hand. *Ans.*—After experimenting with the various packing materials, we can discover but very little difference in favor of any of them. We have wintered bees as well under planer-shavings as under the best wheat chaff. Chaff has the preference for cushions because it is lighter, and is more available for the average farmer. Where forest-leaves are used, the packing should be made thicker, and pressed down so as to be more compact.

A. P. H., of Illinois, inquires whether it is too late too feed. *Ans.*—If colonies are short of stores we would feed even up to and into cool or cold weather; but the syrup should be next thing to hot when given to the bees; and if placed under chaff cushions, we think there will be no trouble about the bees taking it down; but when they are fed so late, the syrup should be a little thicker than usual. The usual proportion is 20 lbs. of sugar to a gallon of water. During cold weather we would make the syrup about 25 lbs. of sugar to a gallon of water, because during cold weather the bees will not be able to evaporate the honey down as well. If the weather is freezing, or down near zero, we would give the bees cakes of hard candy. Full particulars of how to make are given under "Candy," in the A B C of Bee Culture

C. F. F., of Minnesota, wishes to know whether we would advise him to winter his bees in the cellar, or outdoors in double-walled chaff hives. *Ans.*—In the very coldest climates, or, at least, where the winters are severe, and the temperature runs for several weeks below zero, cellar wintering seems to prevail. Whether this is because bees can best be wintered that way or not, we can not say; but it is usually safer to follow the prevailing custom. Indeed, some bee-keepers say it is impossible for them to winter on summer stands, even when packed in hives of the most improved pattern. On the other hand, there are some bee-keepers—for instance, E. Sturgeon, of Kincardine, Ont., Can.,—who can not winter indoors, but always have success in outdoor packing. For the latitude of Northern Ohio, the outdoor method gives generally the best result —that is, the beginner seems to succeed better.

C. C. & S., with several others, say that their bees seem to be suffering from fits; that they come out and flop and crawl around and finally collapse; that they have a sort of tremulous motion to their wings, the bees themselves having a swollen and greasy appearance. *Ans.*—This is what is called "bee-paralysis,"—a disease that is getting to be quite common, although it has never proven to be any thing serious except on one or two occasions, and is generally confined to two or three colonies. We have, in the past, recommended removing the queen and introducing another; but reports show that this does not always work. Some recommend giving the bees a fine spray of slightly salted water, the spray being scattered over the combs and the bees. Some insist that this always cures, while others say it has no effect. As the disease sometimes disappears of itself, we are obliged to confess that we know of no remedy that can be surely relied upon, although, if we had diseased colonies, we would administer the salted spray.

NOTES OF TRAVEL.

ON THE WHEEL—CONTINUED FROM OUR LAST ISSUE.

By the time I had made a little circle with my wheel through the streets of Wooster it was so near dark that I found I should not be able to reach any point to stay over night if I trusted to the wheel alone; but as I had already got started, and wanted to go somewhere, I decided to take passage on a new railroad for Lodi, Medina Co., O. This place is only ten or twelve miles from my home, and close by the town is the large Harrisville swamp I have before alluded to. There is very nearly a square mile now devoted to onions and celery. I told the landlord I wanted him to explain to me the manipulations of the lock on the front door, for I wanted to take a run on my wheel through the celery and onion grounds before breakfast. I was accordingly out at the first gray streak of dawn. But a fog had settled over the swamp, so I could hardly see a rod before me. I enjoyed my ride greatly, however, and investigated the improvements they are making in their ditching, and arrangements for letting off the surplus water better. This dry time gives ample opportunities for doing many jobs in the way of ditching or deepening ditches, that could not well be done at any other time. I did not do very much of the swamp, however, before breakfast. I lost my way in the fog, but *found* an excellent appetite. After breakfast, when the sun had got out a little, I made very much better headway. I was greatly pleased to see that men and women both were out in large numbers, diligently clearing the weeds from acres and acres of onions, even if they were almost ready to harvest. It is quite customary in many onion-fields to let the weeds go toward the end of the season; but the different foremen informed me here that the proprietors had decided that weeds were a detriment, even when onions were just finishing up; and another thing, more or less of them would be maturing seed almost before one knew it. Accordingly, the weeds were all deposited in ditches—now dry ditches—between the beds. They were afterward drawn out and spread in the roadways. If they wanted to grow after being tramped down and ground under foot, they could do so. The White Plume celery, with its plumes just surmounting the sharp mass of black earth, was a most beautiful sight to behold; and as one looks over these broad acres, extending off almost too far for the eye to distinguish onions from celery, he wonders where they will find a market for their immense crops. The managers, Messrs. Wean, Horr, Warner & Co., decide that their present crop will reach nearly 135,000 bushels. You need not think there is a mistake in the figures here. It is really 135 *thousands* and not so many *hundreds;* and these people have learned by experience how to dispose of such an enormous crop as this, and at good prices too. They have immense warehouses, something like corncribs. The onions are carefully sorted, and placed in these cribs to cure. After being stored a certain length of time they are sorted again. Those that seem likely, to the experienced sorter's eye, to decay, are disposed of first; and as the winter advances the best ones are moved into the buildings with more and more protection. Nothing is ever lost by frost or freezing, here on these grounds; and some time during the winter the very best specimens of each kind of onions are sorted out for seed next year. Most of the seed they sow is of their own raising. They have learned by experience on a large scale what I learned about raising good onion seed, as described in our last issue.

I am naturally friendly toward the women-folks; but I was inclined to take exceptions, even if it was not any of my own business, to the way the women went to work on this special morning in the great Harrisville swamp. They seemed to be just standing around. Sometimes one of thom would pull a weed, and then hold it in her hands a long while, and then another would pull a weed, and then they looked this way and that. If they were working by the piece, of course it was their own business; but I do not see how they could be doing this kind of work by the piece unless they had, indeed, the job of clearing from weeds a certain bed or field. I finally spoke to one of the men about it, and he said they had "not got a going yet." The dense fog had made the onions and weeds very wet, and their clothing was such that it would get wet and draggly. He said that, when the sun got out so it was not quite so disagreeable for them, if I took notice I would see that they did about as much as the men, before dinnertime. So you see we need to have charity. Some of the small boys did not seem to think it was the nicest kind of work in the world, so I got down on my hands and knees and tried it myself. Why, I think it is just beautiful work, getting the weeds out of the way, and giving such handsome onions a chance to do their best.

"Why, look here, friends; why don't some of those several thousand men in the city of Akron, only a few miles away, come here and pull weeds? They certainly can earn enough to keep their families from starving while they are out of employment."

"See here, Mr. Root. We have had several of those very chaps, and tried to get them to pull weeds. What do you think they said? Why, some of them, when they had just *looked* at the job, and hadn't even *tried* it, went away with *oaths in their mouths* to express their disgust, and saying that they would not work at *that* kind of employment for *anybody.*"

Now, I do not know how true this story is; but I am afraid there is at least some truth in it. Pulling weeds by hand is no doubt tiresome, back-wearying work; but before I would complain, and ask for charity of the city, I would weed onions, even if I did not get more than 25 cts. a day.

The younger ones were very curious to see me ride around on my wheel, and spring off, leaving it standing of itself anywhere I chose to stop. Several days after, I met a friend who had come on a wheel all the way from J. A. Green's, in Ottawa, Ill. After he had seen me leave my wheel right on the stone pavement just where I left it, he spoke:

"Oh, yes! you must be the chap they told of when we were down in the swamp. They said somebody had a wheel that would stand up of itself anywhere he left it."

I find the device very convenient, and perhaps I had better give a cut of it in some future issue.

In one part of the swamp I saw some immense red onions. They were almost as large as the Spanish onions I told you about in our last number. I asked them if they would sell me a barrel of all big ones. They said they would if I could afford to pay $1.50 a bushel. This I very cheerfully agreed to do. I want to enjoy the fun of holding them up before people's eyes, telling them they were raised in some of the worthless swamps (that is, swamps that used to be called worthless) of Medina Co. For years and years this ground was voted of no account whatever; and the present proprietors were laughed at as a pack of fools for being so crazy

as to think they could grow crops where good people had sunk money and made failures for thirty or forty years past. The secret of their success was in first getting an outlet for the surplus water, and getting it under control; next, discovering the precise kind of fertilizer that was needed on this swampy muck. At present they use mostly wood ashes, the greater part being brought from Canada. Stable manure does excellently on celery.

There are some parts of the swamp where they are raising, during this very dry season, magnificent crops of corn. Some of the ears were about the largest that I ever saw; but perhaps the quality of the corn is not quite equal to that grown on upland. The same may be said of their immense cabbages; but with the present small crop on the uplands, people are well satisfied with not only corn and cabbages, but even potatoes, raised in the muck.

How easily I made the ten or twelve miles home on my wheel! By the way, I want to tell you that not only health but strength is increasing while I take these long rides every week or ten days. Nature seems to be building both bone and muscle, and reinforcing the weak points; and, even though I am almost fifty-four years old, I find myself growing more able to climb high hills day by day. There is something a little singular, and something also most wonderfully interesting about this. For a time, when I had ridden a great many miles, the first part that gave out seemed to be my knees. There was hardly sufficient bone and muscle to stand the strain in a certain weak part; but even though I tasked this weak part until it seemed sore and lame, it did no harm. In a week or ten days there was a very perceptible repairing and enlarging and building at just these points. Nature did not seem to be displeased, nor inclined to protest at the unusual and severe exercise. Under the influence of the tremendous appetite that came with the hard exercise, a process seemed to be going on much like that of young animals. Other wheelmen have corroborated this very point; and I feel like saying just now, that not only do I consider the wheel one of the greatest achievements of the present age, but I am inclined to think that no such stride has ever been made in preventing and throwing off disease since the world began as has been given us since the advent of the new safety bicycle with pnuematic tires. In fact, while I write I can not remember that I ever heard of anybody who ever injured his health by riding a wheel; neither have I ever heard of anybody who once got started who did not begin to surmount any sort of disease whatever. There have been one or two reports of people who have died from heart disease while riding a wheel; but the disease was not contracted by wheeling, neither was it clear that the wheel had any thing to do with hastening their death. Now, if any of you have had a different experience, or if I am exaggerating its benefit to health, I shall be glad to be set right.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

THAT VINEYARD APIARY.

It was ever so many years ago that I was full of enthusiasm over the idea of training Concord grapevines so as to shade bee-hives; but it was not till this terribly dry season of 1893 that I realized what my project might amount to in the way of a crop of grapes. Let us see. I have advocated this plan for shading the hives, and it has been sent out till 52,000 copies of the A B C book are scattered over the world, and yet I did not know what a good crop of grapes really was. We are just now gathering our grapes from 400 or 500 vines, and these vines have had no cultivation whatever, and no sort of fertilizer for several years. The grass is cut away with a sickle and lawn-mower. Three or four years ago we did give each vine a good dose of ashes, with a quart of bonemeal—that is all. Well, they are now so loaded with grapes that many have broken their fastenings and gone down on to the ground. In fact, we frequently get a half-bushel basket full of fruit from a single vine. Of course, this is not much for an average grapevine; but, remember these are pruned down and cut back until they have only a trellis about three feet wide and the same in height. It is true, grapes are down to a cent and a half a pound; yet 4000 or 5000 lbs. at even this low figure make quite a little sum of money from a fruit-garden that is no expense whatever, except a little pruning, and tying up the vines each year. What shall we do with so many grapes while they are sold at such low prices? Well, we are taking out the seeds and canning the grapes for pies; and, I declare, grape pies are about as nice as any pies in the world. Ernest adds right here that grape jelly is better; and just now they are running a new machine down in the kitchen, that, by just turning a crank, the dry seeds, skins, and pulp go into one pan while the pure juice drips into another. The machine is called the Enterprise fruit-press, and costs $3.00. Another thing, we are going to have a good lot of unfermented wine—communion wine I believe it is usually called. It is simply grape juice and sugar canned up, exactly as you can up fruit. When anybody is sick it is a most delicious and refreshing drink; and I have seen some folks who found it delicious and refreshing to drink when they were *not* sick at all. It is true, we can not have apples—at least, in our locality—but when you can get a big paper bag full of grapes for *a cent and a half*, how much would it matter about the apples?

A WONDERFUL NEW RASPBERRY.

A few days ago a couple of friends were out looking at my Timbrell strawberries. When I went over and shook hands with them I found they were visitors. One man was a bee-keeper, but the other was not. I soon began to surmise that the one who was not a bee-keeper had something special on his mind. Pretty soon he told me he had some raspberries in a basket, which he wanted to have me look at. I was a little surprised to hear him talk raspberries during the last days of September; but when I came to look into that basket and get in my fingers a sprig containing the largest and finest-looking black raspberries I ever saw in my life, I too became enthusiastic. In the picture below you have a life-size engraving of one of the clusters that I found in that basket. Some of the branches had not only a cluster on the tip of the branch, but great luscious berries were all the way down the stem; in fact, wherever a leaf came out, there were berries. Said I:

"My good friend, where do you live?"

He replied, "I live near the town of Ruggles, some six or seven miles from New London, on your new railroad. My home is in Ashland Co."

"And have you some more berries like these, now growing on your grounds?"

He said he had, and in a few minutes more I had planned making him a visit the very next day. I would have made the whole trip on the wheel, but I was just getting ready to go to the convention at Chicago, and so my time was precious. At 10 o'clock next morning I stepped

from the train at New London and mounted my trusty wheel. The roads were beautiful, and it was one of the finest September days. The seven miles to the home of Mr. Gault was made in just 45 minutes. I found him out by the gate, waiting for me; and in a little time I was among the raspberries in a little inclosure by the side of his dooryard. From the looks of the foliage I should call it a red raspberry, as it grows, when allowed to have its own way, some three or four feet high. The canes bend over, however, more like the black cap; and many of them just then were bent clear to the ground by the weight of these wonderful great berries. About six years ago friend Gault, on his way home from church, was startled by an exclamation from one of his family.

"O pa! just see those great raspberries down there in the weeds, hanging on that little bit of bush."

He got out and picked the berries, and the next day went back with a spade and took up that little spindling bush; and during these six years he has been busy trying to propagate it. For the first three years he made very slow progress because the thing acted differently from any ordinary raspberry; and the only way he could get more plants was by dividing the roots. Three years ago, however, he "caught on," and has since then been multiplying them quite rapidly. In fact, at the present time he has something like 10.000 roots ready to sell in the spring. He said he did not believe in planting raspberries in the fall at all. After I had sampled the berries, and satisfied myself in looking over the large bearing ones, we adjourned to a half-acre near his dwelling, where he has been raising plants. I took the trowel out of his hands several times, in order to dig down into the soil, and see if there was not a

GAULT'S PERPETUAL RASPBERRY.

great lot of manure plowed under, or something of that sort. The berries were growing on ordinary farming land, a little inclined to be sandy. A crop of potatoes was grown there last year, and this year he has had potatoes between the rows of raspberries. The astonishing thing about this plant is its wonderful tendency to bear fruit. For instance, if you buy one of the little plants, with perhaps two or three inches of old wood attached to it, as soon as it commences to grow in the spring a lot of great berries will start on this little short stump or cane. It is not best, however, to let this little stump bear fruit. Pick the berries off or it will overtask the new root; but when several little shoots of new wood come up, you may let them indulge their propensity and bear fruit. Why, one would almost think the plants were strawberries instead of raspberries, for the clusters are sticking right up out of the dry soil but a little higher than strawberries ordinarily grow. I examined the ground all over the patch, and it certainly is not nearly as good or rich as my creek-bottom ground where I grow strawberries and vegetables. He said he had not put on any manure this year because it would be pretty sure to make scabby potatoes.

May be you think I am not posted in regard to all the raspberries there are in the world. Perhaps so; but if this raspberry grows and bears fruit in every locality as it does on the farm of friend Gault, it seems to me it is certainly something in advance of any thing we have on the face of the earth in the way of small fruits and berries. Please consider that it bears a crop of fruit just about the time that ordinary raspberries do. This crop is, of course, on the old canes. Just as soon as this first crop is gone, a crop is coming forward on the new canes of the present season's growth. And then it just keeps bearing as if the plants had gone crazy on the single idea of bearing fruit. There had been a heavy frost the night before I was there, and a good many of the berries had been frozen so as to make them soft. Quite a few had dropped on the ground; but the frost had not spoiled them for my taste. I ate berries until my mouth was red, and my fingers so stained that I was almost ashamed to go in to the dinner-table. Mrs. Root would, perhaps, tell you that that ride of seven miles over good roads in 45 minutes had unfitted me from being a fair and impartial judge of berries; and, by the way, notwithstanding the great lot of berries I ate, didn't I do justice to that excellent dinner? I ate quite a spell after the rest were through; but Mrs. Gault apologized for me by saying that I talked so much during dinnertime I didn't have half a chance, as the rest did. We had stewed chicken and cream biscuits dipped in the broth; and maple molasses, beautiful potatoes, and, finally, grape pie. I thought it was *raspberry* pie; but whatever it was, it was of a kind to make a wheelman's heart glad. We had so much talking to do in regard to the berries and potatoes (friend Gault is a grower of new varieties of potatoes as well as berries) that I came pretty near being too late for my train. However, by making the seven miles in *40* minutes, instead of 45, I reached home safely a little after 3 o'clock in the afternoon.

The question now comes, "How shall the readers of GLEANINGS get some of these new berries to try?" Well, friend Gault is trying to get some nurseryman or fruit-grower to take hold of his discovery. If he does not do that, he will probably offer them for sale in the spring. Perhaps it may save correspondence by saying here that he has at present decided on 50 cts. for each plant, or $5.00 per dozen; and at present he prefers not to tell of his discovery in the way of propagating the plants, unless it is to those who purchase quite a number of them. If it were I, I think I would tell everybody just how it is done; but, of course, it is his privilege to do as he likes with it. The plant is in many respects like the Everbearing raspberry, mentioned in GLEANINGS a year or so ago. Its immense size, however, and its tremendous tendency to bear fruit, also the different appearance of the foliages, marks it as a different thing without question. I feel very anxious to see what the plant will do on some of my very richest ground for market-gardening. The tendency to bear so continually, stands in the way of any very rapid method of propagation. I have asked friend Gault to give us a brief statement in regard to it, and here is what he says:

Mr. Root:—You requested me to give you a few items in reference to those raspberries. I expect to name it "The Gault," or "Gault's Perpetual." This berry was a stray seedling I found by the roadside, not far from my place in Ruggles, Ashland Co., O. The vines are extremely hardy, and the fruit of delicious flavor. As to size, they are immense, some crown berries having measured three inches in circumference. When I found the plant it was quite small, and had but three clusters of berries on it. The *size* of the fruit was that which attracted my attention. It was a year later before I discovered that it was a *perpetual;* and during the six years since I discovered it I have frequently been surprised by new points of merit.

The first crop, which ripens about eight days after the Gregg, is very abundant, and will produce one-third more fruit to the same ground, and it continues in bearing for about three weeks, by which time the new canes commence bearing, and continue till checked by frost. This latter crop is not composed of a few scattering berries at the axils of the leaves, but immense clusters - often numbering 100 berries on a single cane—sometimes resembling a cluster of grapes in form. The photo I left with you was taken from the tip of a cluster which was not more than an ordinary one, and was cut Aug. 21.

TOBACCO COLUMN.

CONDITIONS UNDER WHICH WE GIVE SMOKERS TO PERSONS WHO STOP USING TOBACCO.

First, the candidate must be one of those who have given up tobacco in consequence of what he has seen and read in this department. Second, he promises to pay for the smoker should he ever resume the use of tobacco in any form, after receiving the smoker. Third, he must be a subscriber to GLEANINGS. Any subscriber may, however, have smokers sent to neighbors or personal acquaintances whom he has labored with on the matter of tobacco-using, providing he give us his pledge that, if the one who receives the smoker ever uses tobacco again, he (the subscriber) will pay for the smoker. The one who receives the smoker in this case need not be a subscriber to GLEANINGS, though we greatly prefer that he be one, because we think he would be strengthened by reading the testimonials from time to time in regard to this matter. The full name and address of every one who makes the promise must be furnished for publication.

TOBACCO—THE USERS OF IT ARE NOT THE ONLY SUFFERERS.

Why are sudden deaths so much more numerous now than in former years? Because we had no matches nor cigars until 1830, hence smoking was more difficult, and confined to persons sitting in their chimney-corners (lighting their pipes by the embers, which were never allowed to go out), and the smoke ascended the open flues; while now in tight-stove rooms all of the inmates are obliged to breathe the poison; so, even "if you let it alone" it will *not* let *you* alone. T. B. Terry tells us of a beautiful home, surrounded by wealth and every evidence of refinement, in which a lady lay dying. Her medical attendant, who is a celebrated physician, told him that, although this woman was an idolized wife, yet her husband had killed her; that he had become so literally steeped in tobacco that the insensible perspira-

tion from his body was a deadly poison, and the wife had absorbed enough of this to kill her. He said that he had known such things before, and that some constitutions can bear the poison while others can not, and that he had seen experiments tried at establishments where they treat patients for the cure of the tobacco habit, in which flies were dead in less than five minutes after coming in contact with the perspiration of a tobacco victim. Another simple proof of the poison of tobacco smoke is where birds have been confined in it, and they died in a very short time. Reliable physicians assert that children are killed in the same way when obliged to breathe the poisonous fumes which act on the weakest organs of the body. Then if many must be given up to their deplorable fate, let us diligently endeavor to teach the young, whose veins are yet untainted by this body-destroyer, soul-injurer, to shun it as they would the deadly viper or poisonous upas-tree. If they *must* imitate others, better do as the boy did who bought 25 cents' worth of licorice. When asked whether he liked it he replied, "No; but I want to spit black, like pa." We are great imitators! Then how necessary to teach by example as well as precept!

Sumner, Ill. Ella T. Griffith.

REMEDIES FOR THE TOBACCO HABIT, ETC.

Mr. Root:—Please tell a reader what you know regarding good tobacco cures. Hill's bichloride of gold cures many, but injures the minds of some; so it is claimed by one editor. No-to-bak, he said, generally cures, and never hurts folks. Probably he had reason for his views, but I find folks are slow to believe, and I want to convince them if possible.

Decatur, Ia., Sept. 18. Miss A. M. Boyle.

[My dear friend, I neglected to say, when I spoke of the tobacco remedies, that I had but little faith in any of them, and for the reason that I mentioned—there are so many who do not *want* to be cured. If one who is using tobacco really wishes, from the bottom of his heart, to give it up, God helping him, I am sure he can do it. Now, it may be that this "no-to-bak" and some of these other things would be of some assistance to such a one. But even if it is, you tell us that one of the remedies sometimes injures the mind. I am afraid that any drug so powerful as to break a sinful appetite which has been encouraged to grow for years and years would be very apt to injure the mind or something else. A few confess that they have been helped by no-to-bak: but some of my particular friends who say they gave it a faithful trial declare it amounts to nothing. The fact that the venders agree to pay back the money if it does no good (and I believe they do this), would seem as if it must be a help. But this thing is certainly true: He who is cured of the appetite for liquor by the gold cure, or for the appetite for tobacco by something else, can learn it over again in a very short time if he undertakes to do so. The trouble with sin and sinners since the world began is principally that they do not want to be cured. They prefer to be sinners; and any thing that cuts off what they call their liberty to sin again when they *feel* like it does not seem to suit. The Master said, ages ago, "Ye must be born again;" and I believe that is what we ought to think and say *now*.]

Perhaps I am not eligible under your offer of a free smoker. I used to smoke, but have pretty much quit it; but having a few bees, and having to work with them more or less, I am obliged to light a cigar, and give them the benefit of a smoke. Of course, if I had a smoker I should not need to smoke. I would pay for the same if I should ever again take to the weed.

Ashtabula, O., July 28. A. D. P. Young.

Please send a smoker to James Pig, Hightower, Ky. After seeing your offer of a smoker to all who quit the use of tobacco he has concluded to quit, and promises, if he ever uses the weed again, to pay for the smoker; but in case he should fail to do so, I will remit the price of the smoker. H. C. Clemons.

Hightower, Ky., Aug. 9.

A neighbor of mine said he would quit using tobacco for one of your smokers. He said if he ever used it in any way he would pay for the smoker. His word is good. His name is C. J. Wagoner. Thornton Wagoner.

Twiggs, W. Va., Aug. 17.

I see in Gleanings you send a smoker to those who quit the use of tobacco. I have used the weed for 15 years; but the 18th of last April I quit, and haven't used it since. Now, if you think I am entitled to one you may send it; and if I ever use it any more I will pay you for the smoker. R. H. Treeve.

Mt. Blanchard, O., Sept. 9.

My son, G. F. Von Lienen, has quit using tobacco on account of reading the Tobacco Column. You can send him a smoker. He quit about 3 months ago. I am satisfied he will hold out. His health has improved since he quit. Should he at any time commence again I will pay for the smoker. H. L. Von Lienen.

Somerset, Ill., Sept. 7.

OURSELVES AND OUR NEIGHBORS.

Thy will be done on earth as it is in heaven.—Matt. 6:10.

Wednesday morning, Oct. 4th, we opened our eyes in a beautiful private residence where we had obtained rooms, in Windsor Park, in the suburbs of Chicago. While the women were dressing, Huber and I started out to explore, as we came in the night before too late to know where we really were. A copious rain had made every thing lovely, and we pushed for the beach to see the sun rise out of the water. A fog rested over the deep; and as the sun peeped out it began to assume fantastic shapes, and finally stood like a lamp on a base, a great glowing ball of fire, with the lower part reaching down to the water, and then spreading out to form a pedestal. In a second or two the pedestal parted, leaving the globe to rise up, while the base remained for some time, gradually spreading out on the silvery surface of the water. Then Huber turned, and we caught our first glimpse of the "White City." A great hill or bluff seemed to loom up near the lake, much to my astonishment, for I never knew before there was any such bluff near Chicago. Imagine my astonishment, as the fog lifted, to find that this great hill was a building made by human hands — the Liberal Arts building of the great fair.

We started to go back for breakfast, but we had, it seems, pushed out when we first woke up, for all the world like a couple of bees when somebody has moved their hive in the night. We had crooked and turned ever so many ways, and neither of us knew either street or number where we slept, nor any thing at all about it. Huber finally piloted his father to the spot, when said father was pretty sure it was just the other way. Windsor Park, and, in fact, all

about Chicago for miles, seems just now to be devoted to entertaining strangers. Everybody is very pleasant and accommodating, and we have front rooms and first floor of a gem of rural residence, for only 50 cents each per day.

You may think my text a singular one for such a subject as the World's Fair, with all its worldliness and show, but I think I am right. As I write on our front porch, several hundred Indian boys and girls are on the sidewalk before me. They are going to the fair. They have overcome their natural reticence and timidity, and have come forth from their forest homes, and are now laughing and chatting as merrily as if they were white people. Each has a lunch-box. They evidently enjoy the fair as much as or perhaps more than we whites. They are, without doubt, educated, and many of them look like intelligent and able men and women. The great fair will be a school to them they will never forget, and I am sure it is a school that, on the whole, elevates. These Indians are taken by the government of the United States from all over the Union, and, when taken when they are *children*, there has been very little trouble in making efficient and law-abiding citizens of them. Mr. Dadant said, page 642, "As soon as the Europeans took possession of America, 400 years ago, they tried to civilize the Indians. . . . . Why did they not succeed? Because these savages act the way they are built." If he sees these boys and girls go through their military and other drills I think he will at least modify this somewhat.

Now, this great exposition, I think, is the biggest step the world ever took, in the way of an object-lesson to all nations of the earth.

In the arch of the great building of Manutures and Liberal Arts (the largest building in the world) we read, "The United States of America bids the whole world welcome.

1492—1893."

And over the peristyle we read, "Ye shall know the truth, and the truth shall make you free."

And again:

"I Freedom dwell with Knowledge; I abide with men by culture trained; and fortified conscience my scepter is, and law my sword."

Now let me take an illustration:

In the machinery building is a great Corliss engine of 3000 horse-power. Take a look at it and the machinery connected with it, and then glance at the swarms of human beings all about and aloft in the galleries, and reflect that this complete and ponderous machinery is the work of these comparatively tiny beings, directed by the spark of intellect in a single human brain. Does it not all seem almost ridiculous?

Let us single out an illustration again, and take only one line of discovery. Even *I* can remember when electricity was in its infancy (or hardly yet born, to tell the truth). We tried all metals, and, after careful experiments, found *copper* the best conductor for this new agency. Other careful tests decided what *sized* copper wires were best for the work we wanted done; other tests and trials told how these coils should be disposed. Still other tests and trials, made by hard-working hands and brains, brought out the modern dynamo, in all its varied forms, as we see it in Machinery Hall, and, in fact, almost all nations of the earth are at work at it. The discoveries that crowd thick and fast are like a romance to those who are familiar with it. Edison's wonderful inventive genius startled the world as if a meteor had suddenly come in among us; but other Edisons are now coming thick and fast—perhaps none *quite* his equal, but after he, like Columbus, had opened the way, it was comparatively easy. Another thing, Edison could not very well have done his work had not the times been ripe for it, and had not helpers and facilities been near. Men and money were near to back him. We were beginning to work together. Capital and labor and brains were beginning to help each other. When the great Corliss engine was wanted, some one may have said, "Mr. Brown, can you make me a 3000-horse-power engine?"

Mr. Brown takes the job, and puts it into the hands of trusted and tried men. Some one man takes a general supervision, but even *he* has a sort of advisory committee to counsel with. Then a host of lesser intellects grasp the minor details. The modern engine has been evolved exactly as the dynamo has been. We *feel* our way in the dark, as it were, but we are continually making progress. Every year shows how far we have advanced; but the footsteps of advance are wonderfully crooked and devious, and oftentimes as intricate as a labyrinth. Those who follow us discover thousands of short cuts. There seems to be no other way. God has, it seems, thought best to let us labor through these devious ways to get at the *best* way only after ages of "cutting and trying."

Have you ever felt like saying, "Does God *himself* really know all these things it takes us so long to find out?" Why, to be *sure* he does. He is "Alpha and Omega, the beginning and the end." He would not be God otherwise. We can not for a moment entertain the thought that weak blundering mankind is going where no great superior intelligence has gone before. Some great astronomer, I believe it was Kepler, is reported as saying, "I thank thee, O Lord, that I am permitted to think thy thoughts after thee."

And now let us go back to the Indians from the various Indian schools in America. Watch the young men and women both as they gaze with wonderful curiosity at this scene of wonders. In our factory at home is a 100-horse-power engine. I have heard much talk about the automatic cut-off, etc., but I never understood it until I saw one here at work, with the whole top of the cylinder and steam-chest sliced off. The whole was so plain and clear before the eye, that even Huber (as well as the Indian boys) could understand it perfectly. Well, this same working model was moved by a little electric motor. You see, we don't have to put up expensive shafting and have long belts nowadays to get *power* where we want it. The immense battery of boilers, and the great engines, move massive dynamos that send currents of electricity (or power in a new form) even miles away, and then these wires (some as large around as your thumb) give us the power anywhere it may be wanted. But that isn't *all*. The lagoons and bays of water are swarming with electric boats that scud with wonderful power and speed, shooting here and there, stopping or starting with wonderful celerity, and yet no steam nor smoke nor even engine is in sight. How should electricity be made to reach these boats? Why, it is the wonderful storage battery that does it. Before it came it was not possible to get such energy in so small a space. One can hardly resist the thought that it is not a big step toward a machine that may rush through the air.

While Huber and I were having a real "picnic" in Machinery Hall, Mrs. Root and Constance were listening to a lecture on *bread-making*, in Ladies' Hall, by Mrs. Ewing. Mrs. E. is an Edison among women (or she wouldn't be called to such a place), and her talk was really a lecture on health. When she was married, her husband was a poor dyspeptic.

Now he is a fine-looking, gray-haired, but *well man.*

To-day the women were almost wild with enthusiasm over a lecture on dress, with practical illustrations, by Mrs. Jenness Miller. Now the Indians again. Somebody said when they took the children, there is almost no trouble. We can educate the "Injun" out of them—at least practically so. It is true, they still prefer to lie down on the floor before the fire, to sleeping in beds; but they can be educated, as a rule. We shall have to give up many of these fathers and mothers, but, strange to tell, their untrained parents are all ready and *anxious* to send their children off to school. Are they so very much different from us whites? Aren't there some of us who haven't lost all the "Injun" yet? O dear friend! there is a great lot of Injun yet in *my* poor self, and I could only say again and again, "May God have mercy on *me* a sinner." If it were not for the promise that the blood of Christ *shall cleanse* from *all* sin, I do not know but that I should lose hope, and sometimes almost give up in despair.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.
ILLUSTRATED SEMI-MONTHLY
36 PAGES 7×10
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And in their mouth was found no guile; for they are without fault before the throne of God.—Rev. 14: 5.

The *Progressive Bee-keeper*, although its editor is comparatively new in the business, is already in the front rank of bee-journalism.

The beginner will find seasonable questions with seasonable answers under the department elsewhere of Answers to Questions.

Although Gleanings enjoys the distinction of being an illustrated journal, this number in particular is rich in high-class engravings.

By the time this journal is out, the big Columbian convention will be a matter of history. In our next issue we propose to give, as usual, a brief report of the first sessions.

A short time ago, comparatively, it was our pleasure to announce that Bro. Newman's health seemed to be improving; but from the last *American Bee Journal* we learn that he is very unwell again. However, Mr. Newman expects, at this writing, to be present at the Columbian convention.

Perhaps many of our readers will be wondering whether it would be advisable for them to try sealed covers in wintering outdoors. We would say, let them alone except for experimental purposes in a small way. After all the evidence was secured last spring, the conclusion was irresistible that upward ventilation and absorbents gave the better results.

It seems from the *American Bee Journal*, that, years ago, Adam Grimm found, in his experience, that the bright yellow Italian bees were less prolific; but if we may judge from a few of the queens of the yellow sort that have been reared in these latter days we should say they are just as prolific. We hope, since the 23 years that have elapsed since Mr. Grimm wrote his article, that queen-rearing has progressed to such a plane that beauty as well as general usefulness have been combined.

Le Rucher is the title of one of our most valued French exchanges, which enters upon its tenth volume next January. It is edited by Mr. Alexander Leroy, one of the most progressive bee-keepers, so far as we know, in France. It is fully up to the times, and is published at Amiens, France. Those of our readers who can "lire la langue française" can not do better, we believe, than by subscribing to this enterprising paper.

Glucose, unless there is a large amount of it, does not prevent honey from candying. It is a mistaken notion that all honey that candies is pure. Last spring, when we were experimenting to determine how reliable a good educated taste was in detecting glucose in honey, it will be remembered that we placed various quantities of the stuff in the honey, varying all the way from 10 to 75 per cent. We have the samples on hand now, and all show more or less candying, with the exception of that which is about 75 per cent of glucose. Bro. Hutchinson, some years ago, tried similar experiments with the same results; but there is a difference between the candying in glucosed honey and that which is absolutely pure; and only one who has carefully compared the two side by side, knowing the contents of each jar, could detect the difference.

In the *Bee-keepers' Review*, a correspondent makes some criticism on Mr. Taylor's experiment with the Langdon non-swarmer, referring to which Mr. T. caustically replies as follows:

In reply to the criticisms of friend Rauchfuss, I desire to say that I write for those who think and who read before they criticise. Time and space would fail me were I to write at such length as to compel acceptance without the exercise of thought. I know my readers have knowledge, and I expect them to use it in interpreting me. This is not for friend R. especially, but for certain others also, and, at all events, let the criticism come; it will help to get at the truth which we are all seeking.

We insert the above because there is a good deal of truth in what Mr. Taylor says, and we ourselves have been many times misinterpreted; but at the same time, the language seems to us "a leetle bit" harsh; but as friend Taylor has said it, we will let him do the clubbing for our benefit as well as his own.

For the last two days we have had the very great pleasure of having with us a distinguished bee-keeper clear from Australia—Mr. J. W. Pender, who is vice-president of the Hunter River Bee-keepers' Association—a society that occupies the same position relatively as our North American of this country. Mr. Pender is father of Mr. W. S. Pender, who has written more or less for Gleanings, and through whose instrumentality queen-bees are admitted by mail to all parts of Australia. Mr. Pender goes with us to-day, Oct. 11, to the big convention in Chicago. It is not often that our society has been honored by the presence of so distinguished a delegate from so distant a country. We hope to have more to say in regard to bee-keeping in Australia, as we gathered it from some very pleasant conversations. Oh, yes! we are also honored with a visit from Mr. Karl Rudolph Máthey, of Kesmark, Hungary. Mr. Máthey is a German bee-keeper of no small note, and is thoroughly well versed in apicultural subjects for the whole world. Although he speaks several languages, he can not converse in English; but our old standbys, Mr. Borger and W. P., managed that part admirably, so our conversation has had to be carried on somewhat in the form of a triangle—Mr. B. and W. P. forming one side, Mr. Máthey another, and we forming the base. But we hope to have more to say in

regard to both of these friends who have visited us, and also in regard to apiculture as now carried on in their respective countries.

ALTHOUGH we had a little tilt with "The Stinger," in the last issue of the *American Bee Journal*, we can not refrain from complimenting him on some of his bright sayings. Sometimes they sting, but more often the effect is more pleasant than otherwise. Here is a sample:

Away "out West," where grow big mountains,
And "rocky" hills with cooling fountains,
There wanders a man who pictures "scenings,"
In a beautiful paper that is known as GLEANINGS.
The fellow's quite "queer" though not a gambler;
He's neither a bachelor—just simply a "Rambler."

Here is another:

Doolittle, Root, and Miller have an argument under way in GLEANINGS concerning the respective merits of wooden and wire paddles for "shooting" bees on the wing. It looks as if one side had been used to wielding baseball bats and the other tennis bats, the latter being much like the wire paddles used in killing obnoxious bees. "Paddle" your own canoes, boys, and may the best man win.

We suppose The Stinger means that Doolittle is the one who wields a baseball bat, and that Miller and "us" are the fellows who wield tennis rackets. Yes, and here is another equally good:

Doolittle's perennial little advertising man is "always on the square," as I suppose Doolittle himself is. But the poor little fellow has been compelled to support himself so long in a perpendicular position that he must have become tired of the vertical attitude, and, as a relief to his vertebra, he has assumed a horizontal position. (See advertising, page 288 of this issue.)

THE last report from the Michigan Experiment Apiary, on the use of foundation in the brood-chamber, is an exceedingly valuable one —the more so as the experiment was conducted so carefully, and with such elaborateness in detail. Mr. Taylor, it seems, hived four normal swarms on frames of empty comb. These he called group A. Group B consisted of the same number of swarms hived on full sheets of foundation; and group C, four swarms on starters only. The result of the whole experiment is boiled down so well by Mr. Taylor in the last paragraph of his article in the *Review*, that we can do no better than to give it here:

If, then, we may trust our tables, they show for the last half of the summer honey season: 1. That for profit, foundation in the brood-chamber for swarms has a decided advantage in point of surplus comb honey over both drawn comb and frames with starters only; that drawn comb stands second and starters third. 2. That in point of total gain in both brood-chamber and surplus, the same order holds, and to nearly the same extent. 3. That fairly strong colonies show a very decided advantage over light ones in point of comb-honey surplus, and also to a small extent in the total gain. 4. That light colonies sustain their rate of gain in all cases better than fairly strong ones. 5. That swarms on starters only, sustain their rate of gain decidedly better than do those on comb or on foundation. 6. That of the light colonies, those on starters are decidedly more profitable than those on either comb or foundation. I ought to explain here that each swarm was hived on a brood-chamber equal to that required to hold five L. combs.

If we understand Mr. T. correctly, the result shows that full sheets of foundation give a decided advantage over the two other conditions in point of comb honey; but our friend Mr. Hutchinson seems to think that the starters may be, after all, the most profitable, because the light swarms gave the best results when hived on starters, while the heavy swarms gained on the others from the start. From this he argues that, if the flow had been continued for a considerable length of time, it would be fair to assume that swarms with starters would give the best results; but with most of us there is only a short honey-flow of from three to four weeks; and therefore we are of the opinion that a majority of the bee-keepers would secure better results with full sheets of foundation.

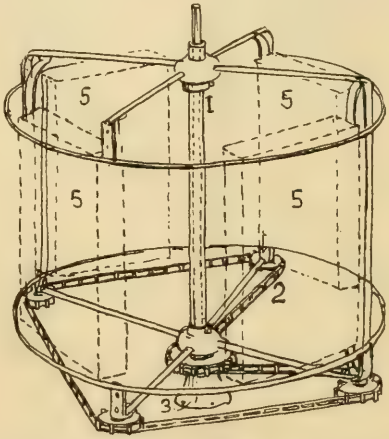
We hope friend Taylor will try this experiment again another season, for different years may modify results somewhat.

TRADE NOTES.

AN AUTOMATIC REVERSIBLE EXTRACTOR; A SUGGESTION FOR THE FOUR AND SIX FRAME COWAN EXTRACTORS.

Some time ago a correspondent wrote us that he had an improvement on the manner of reversing the baskets to the Cowan extractor. At our request he furnished us a drawing and description, which we herewith present to our readers.

Mr. A. I. Root:—In answer to your request I will try to explain to you the working of my extractor in connection with your new Cowan, a cut of which I find on page 364 of GLEANINGS. The only difference between that and mine is this: Instead of the solid shaft running through the hubs of the reel, mine would be a ¾-inch gas-pipe, as long as the reel is deep. Through this I put my shaft, a size that will play easily through the hole in the pipe, the shaft to be a few inches longer than the tank is deep, with a socket secured in the bottom of the can, for the lower end of the shaft to revolve in. On this shaft, under the lower hub of the reel, at the prop-



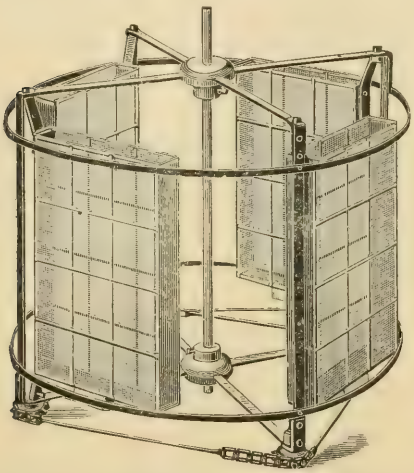
er height, I fix with a set-screw a sprocket-wheel about twice as large as the ones on the lower ends of the basket-shafts. An endless chain connects the basket sprocket-wheels and the sprocket-wheel around the center-shaft (as per drawing), with the crank on top of the shaft (to reverse the baskets, reverse the motion). Of course, every sprocket-wheel would want to be held in place by set-screws, so as to adjust every basket alike. There you have the best reversible extractor that it is possible to make. If the chain and wheels could be placed on top of the reel without interfering with putting in the frames I think it would be much better, as it would bring them up out of the way of the honey. I think you will be able to get my ideas with the description I have given you, with the aid of the rough drawing of the chain and wheels which I inclose. The center-wheel, piece of pipe, and a little longer chain, would be the difference between my machine and yours.

My extractor, which I have used for two years, is a home-made affair. I made the sprocket-wheels of galvanized iron, over which I run a small steel wire chain, such as we buy at the hardware store for halters. I think it would work as well as the regu-

lar link belt, if we had wheels to match, and be much cheaper. Every one who has seen my extractor work pronounces it a success.

San Jacinto, Cal., Aug. 29. J. H. Dustin.

To save the reader the trouble of looking up the cut on page 364, we produce it again here, in order that the comparative difference—or, rather, that the improvement itself—may be more clearly understood by comparison. As our correspondent states, the two extractors are exactly the same, except that reversing the crank in Mr. Dustin's extractor reverses the baskets; while in the regular Cowan, one hand catches one of the baskets while the reel is revolving, retards its outer edge, causing its other surface to be turned to the other side of the can. As the baskets are all connected together they will all move at the same time. Now the question might arise right here, "Which extractor will reverse quickest, and



with the least trouble?" It will be admitted, we think, that the regular Cowan has fewer parts, and is more substantial; and *if* it can be reversed as quickly, it would have the preference. There is no doubt that friend Dustin's plan will work; indeed, for a *crank*-reversing device his principle is superior to and vastly ahead of any thing else of the kind. But, we ask, is *crank*-reversing necessary when the work can be done in a far simpler way, with less cost and without loss of time? As long as the operator has two hands—one to turn the crank—we can not see that Mr. Dustin gains any thing. On the other hand, he loses in the cost of extra reversing gear. And again his crank-reversing device would, it seems to us, take *more* time to reverse, for the reason that the reel would have to come to a dead stop. The inertia of the reel in *motion* would have to be entirely overcome, and the inertia of the reel at rest would have to be again overcome, all of which would take time; whereas, by the plan used on the regular Cowan, the reel does not have to come to a standstill at all during the reversing process.

We could make for our customers either form of extractor. The Dustin crank-reversing gear would, however, cost about $10.00 more for each machine.

Apiculture is a subject I have been trying to learn about. I went to Harper Brothers, thinking they had matter on the subject. They sent me to the *American Agriculturist*, where I found three works, your A B C among them. It pleased me most. I bought a copy, and have read a good part of it. This took place two days ago. I would not take $50 for the book and be without it. The classification is complete; the information is general and to the point, and the Christian spirit manifested in the management of your work delights me.

Brooklyn, N. Y., Aug. 28. Mrs. N. J. Ashton.

Books for Bee-Keepers and others.

Any of these books on which postage is not given will be forwarded by mail, postpaid, on receipt of price.

In buying books, as every thing else, we are liable to disappointment if we make a purchase without seeing the article. Admitting that the bookseller could read all the books he offers, as he has them for sale, it were hardly to be expected he would be the one to mention all the faults, as well as good things about a book. I very much desire that those who favor me with their patronage shall not be disappointed, and therefore I am going to try to prevent it by mentioning all the faults, so far as I can, that the purchaser may know what he is getting. In the following list, books that I approve I have marked with a *; those I especially approve, **; those that are not up to times, †; books that contain but little matter for the price, large type, and much space between the lines, ‡; foreign, §. The bee-books are all good.

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15	Langstroth Revised by Ch. Dadant & Son	1 25
10	Quinby's New Bee-Keeping	1 40
	Thirty Years Among the Bees, by H. Alley	50
4	Success in Bee Culture, by James Heddon	46
	Handling Bees, by Langstroth. Revised by Dadant	08
	Bee-keeping for Profit, by Dr. G. L. Tinker	25
5	The Honey Bee, by Thos. William Cowan	95
	British Bee-Keeper's Guide Book, by Thos. William Cowan, England§	40
3	Merrybanks and His Neighbor, by A. I. Root	15
4	Winter Problem in Bee-keeping, by Pierce	46

MISCELLANEOUS HAND-BOOKS.

3 | A B C of Potato Culture, Terry** 35
This is T. B. Terry's first and most masterly work. The book has had an enormous sale, and has been reprinted in foreign languages. When we are thoroughly conversant with friend Terry's system of raising potatoes, we shall be ready to handle almost any farm crop successfully. It has 48 pages and 22 illustrations.

5 | A B C of Carp Culture, by Geo. Finley 35
5 | A B C of Strawberry Culture, by T. B. Terry and A. I. Root, 144 pages; 32 illustrations 35
5 | An Egg-Farm, Stoddard** 45
| Amateur Photographer's Hand-book** 70
| Barn Plans and Out-Buildings* 1 50
| Canary Birds, Paper, ... 50
| Draining for Profit and Health, Warring .. 1 50
10 | Fuller's Grape Culturist** 1 40
| Farming For Boys* 75
This is one of Joseph Harris' happiest productions, and it seems to me that it ought to make farm-life fascinating to any boy who has any sort of taste for gardening.

7 | Farm, Gardening, and Seed-Growing** 90
This is by Francis Brill, the veteran seed-grower, and is the only book on gardening that I am aware of that tells how market-gardeners and seed-growers raise and harvest their own seeds. It has 166 pages.

12 | Gardening for Pleasure, Henderson* 1 85
While "Gardening for Profit" is written with a view of making gardening PAY, it touches a good deal on the pleasure part; and "Gardening for Pleasure" takes up this matter of beautifying your homes and improving your grounds without the special point in view of making money out of it. I think most of you will need this if you get "Gardening for Profit." This work has 404 pages and 203 illustrations.

12 | Gardening for Profit, new edition** 1 85
This is a late revision of Peter Henderson's celebrated work. Nothing that has ever before been put in print has done so much toward making market-gardening a science and a fascinating industry. Peter Henderson stands at the head, without question, although we have many other books on these rural employments. If you can get but one book, let it be the above. It has 376 pages and 138 cuts.

| Gardening for Young and Old, Harris** 1 25
This is Joseph Harris' best and happiest effort. Although it goes over the same ground occupied by Peter Henderson, it particularly emphasizes thorough cultivation of the soil in preparing your ground; and this matter of adapting it to young people as well as old is brought out in a most happy vein. If your children have any sort of fancy for gardening it will pay you to make them a present of this book. It has 187 pages and 46 engravings.

10 | Garden and Farm Topics, Henderson** 75
| Gray's School and Field Book of Botany .. 1 80
5 | Gregory on Cabbages; paper* 25
5 | Gregory on Squashes; paper* 25
5 | Gregory on Onions; paper* 25
The above three books, by our friend Gregory, are all valuable. The book on squashes especially is good reading for almost anybody, whether they raise squashes or not. It strikes at the very foundation of success in almost any kind of business.

15 | How to Make the Garden Pay.** 1 35
By T. Greiner. This is a new book, just out, and it gives the most explicit and full directions for gardening under glass of any book in the world. Those who are interested in hot-beds, cold-frames, cold-greenhouses, hot-houses or glass structures of any kind for the growth of plants, can not afford to be without the book.

| Handbook for Lumbermen 10
10 | Household Conveniences 1 40
2 | How to Propagate and Grow Fruit, Green* 15
2 | Injurious Insects, Cook 25
10 | Irrigation for the Farm, Garden, and Orchard, Stewart* 1 40
This book, so far as I am informed, is almost the only work on this matter that is attracting so much interest, especially recently. Using water from springs, brooks, or windmills, to take the place of rain, during our great droughts, is the great problem before us at the present day. The book has 274 pages and 142 cuts.

3 | Maple Sugar and the Sugar-bush** 35
By Prof. A. J. Cook. This was written in the spring of 1887 at my request. As the author has, perhaps, one of the finest sugar-camps in the United States, as well as being an enthusiastic lover of all farm industries, he is better fitted, perhaps, to handle the subject than any other man. The book is written in Prof. Cook's happy style, combining wholesome moral lessons with the latest and best method of managing to get the finest syrup and maple sugar, with the least possible expenditure of cash and labor. Everybody who makes sugar or molasses wants the sugar-book. It has 42 pages and 35 cuts.

1 | Poultry for Pleasure and Profit** 10
11 | Practical Floriculture, Henderson* 1 35
10 | Profits in Poultry* 90
2 | Practical Turkey-raising 10
By Fanny Field. This is a 25-cent book which we offer for 10 cts.; postage, 2 cts.

4 | Peabody's Webster's Dictionary 10
Over 30,000 words and 250 illustrations.

2 | Rats: How to Rid Farms and Buildings of them, as well as other Pests of like Character 15
This little book ought to be worth dollars instead of the few cents it costs to any one who has ever been troubled with these pests, and who has not! It is written in such a happy vein that every member of the family will read it clear through, just about as soon as they get hold of it. It contains a complete summing up of the best information the world can furnish.

1 | Silk and the Silkworm 10
10 | Small-Fruit Culturist, Fuller 1 40

10 | Success in Market-Gardening* 90
This is a new book by a real, live, enterprising, successful market-gardener who lives in Arlington, a suburb of Boston, Mass. Friend Rawson has been one of the foremost to make irrigation a practical success, and he now irrigates his grounds by means of a windmill and steam-engine whenever a drought threatens to injure the crops. The book has 208 pages, and is nicely illustrated with 110 engravings.

| Ten Acres Enough 1 00
| The Silo and Ensilage, by Prof. Cook, new edition, fully illustrated 25
| Talks on Manures* 1 75
This book, by Joseph Harris is, perhaps, the most comprehensive one we have on the subject, and the whole matter is considered by an able writer. It contains 366 pages.

2 | The Carpenter's Steel Square and its Uses. 15
10 | The New Agriculture; or, the Waters Led Captive 75
2 | Treatise on the Horse and his Diseases 10
5 | Tile Drainage, by W. I. Chamberlain 35
Just out. Fully illustrated, containing every thing of importance clear up to the present date.
The single chapter on digging ditches, with the illustrations given by Prof. Chamberlain, should alone make the book worth what it costs, to every one who has occasion to lay ten rods or more of tile. There is as much science in digging as in doing almost any thing else; and by following the plan directed in this book, one man will often do as much as two men without this knowledge. The book embraces every thing connected with the subject, and was written by the author while he was engaged in the work of digging the ditches and laying the tiles HIMSELF, for he has laid literally miles of tile on his own farm in Hudson, O.

5 | Tomato Culture 35
In three parts. Part first—by J. W. Day, of Crystal Springs, Miss., treats of tomato culture in the South, with some remarks by A. I Root, adapting it to the North. Part second—By D Cummins, of Conneaut, O., treats of tomato culture especially for canning-factories. Part third—By A. I. Root, treats of plant-growing for market, and high-pressure gardening in general. This little book is interesting because it is one of the first rural books to come from our friends in the South. It tells of a great industry that has been steadily growing for some years past; namely, tomato-growing in the South to supply the Northern markets. The little book, which is fully illustrated, gives us some pleasant glimpses of the possibilities and probabilities of the future of Southern agriculture. Even though you do not grow tomatoes to any considerable extent, you will find the book brimful of suggestions of short cuts in agriculture and horticulture, and especially in the line of market-gardening.

2 | The New Celery Culture 15
This summing-up of this new industry amounts to this: You fix your ground just as rich as you can possibly get it, with stable manure, chemical fertilizers, or any thing else that will do the business. Then put out your plants 7 inches apart each way, and give them water enough to make them boom right along from the word go. The idea is somewhat new; but enough succeeded in 1892 to demonstrate that, like the new onion culture, it promises great possibilities.

3 | Winter Care of Horses and Cattle 35
This is friend Terry's second book in regard to farm matters; but it is so intimately connected with his potato-book that it reads almost like a sequel to it. If you have only a horse or a cow, I think it will pay you to invest in the book. It has 44 pages and 4 cuts.

8 | What to Do and How to be Happy While Doing It, by A. I. Root 50
3 | Wood's Common Objects of the Microscope** 47

NEW BOOKS ON GARDENING.

2 | Celery for Profit, by T. Greiner 25
The first really full and complete book on celery culture, at a moderate price, that we have had. It is full of pictures, and the whole thing is made so plain that a schoolboy ought to be able to grow paying crops at once, without any assistance except from the book.

3 | Onions for Profit 45
Fully up to the times, and includes both the old onion culture and the new method. The book is fully illustrated, and written with all the enthusiasm and interest that characterize its author, T. Greiner. Even if one is not particularly interested in the business, almost any person who picks up Greiner's books will like to read them through.

5 | Manures; How to Make and How to Use them; in paper covers 45
6 | The same in cloth covers 65
Covering the whole matter, and discussing every thing to be found on the farm, refuse from factories, mineral fertilizers from mines, etc. It is a complete summing-up of the whole matter. It is written by F. W. Sempers.

7 | Market-gardening and Farm Notes, by Burnett Landreth 90
The Landreths are the pioneer seedsmen of America; and the book is worth fully as much as we might expect it to be. I think I received hints from it worth the price, before it had been in my hands fifteen minutes. It is exceedingly practical, and tells what has been done and what is BEING done, more than it discourses on theory.

A. I. ROOT, Medina, Ohio.

Reids' Fruit Trees, Small Fruits, Vines, Roses, Ornamentals.
All the best new and old varieties. The celebrated TIMBRELL Strawberry. New Fruits a specialty. Buy direct and save one half. Price List *free*.
E. W. REID, BRIDGEPORT, OHIO.

Gleanings In Bee Culture

For only 50 cts. The journal has a big circulation because it is made up of practical ideas, good printing and paper, and first-class original engravings—yes, lots of 'em; in fact, because it has MERIT. But *merit* alone won't boom the circulation; so we propose to offer it TO NEW SUBSCRIBERS, from now on till Jan., 1895, for $1.00. For $2.50 we will send the journal to new subscribers from now till Jan., 1895, and one of those new improved Crane smokers, postpaid. Crane smoker alone $2.00. Send for our free illustrated 52-page catalogue of Bee-keepers' supplies, and sample copy of GLEANINGS. **A. I. ROOT, Medina, Ohio.**

FOR ALL KINDS OF BEE KEEPERS SUPPLIES. ADDRESS LEAHY MFG. CO. HIGGINSVILLE MO.

In writing advertisers please mention this p per.

DOVETAILED HIVES, SIMPLICITY HIVES,
SECTIONS, EXTRACTORS, ETC.
FULL LINE OF
BEE-KEEPERS' SUPPLIES.
60-PAGE CATALOGUE. 1tfdb
J. M. JENKINS, WETUMPKA, ALABAMA.
☞In responding to this advertisement mention GLEANINGS

Special Premium for October.

During the next three months very many subscriptions expire, and have to be renewed. In order to avoid sending you notice of the expiration of your subscription, and to induce you to have the date on the wrapper of your paper advanced one year, we have decided to offer special premiums. These will be offered for only a limited time; and, if taken advantage of at all, must be accepted within the specified time. Our first offer we will not agree to hold open beyond the month of October. To every present subscriber who is not already in arrears, and who will send his renewal, with $1.00 before his subscription expires, and before Nov. 1, 1893, we will send free postpaid one of those wonderful

Augite Stove-Mats.

We first offered this article for sale in November, of last year; and since that time we have disposed of about 150 gross, or over 20,000. Very many of our readers are already supplied, and appreciate the blessing they have been to them. They are, in fact, a household necessity. Probably many of those first sent out now need replacing with new ones, or perhaps an extra one would not come amiss during the fruit-canning season, especially when it will cost you nothing. Certainly you could make no worse use of it than to present it to a neighbor who has not yet learned of its value. If your subscription is in arrears we will require that you pay all arrears and a year in advance in order to secure this premium. If you secure a new subscription to send along with yours, together with $2.00 to cover both subscriptions, you may offer such person GLEANINGS till the end of 1894 from the time you take the subscription for $1.00, and we will give you another stove-mat for securing the name and send along with yours.

We supply the mats for sale at 10c each: $1 00 per doz.; 6 doz., $5.50; 12 doz., $10.50. By mail, singly, 6c each, 2 or more in a package, 5c each extra for postage.

A. I. ROOT, = = Medina, Ohio.

Bee-Hives.

Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue 23-22db

W. H. PUTNAM, River Falls, Pierce Co., Wis.

For new price list of

PURE ITALIAN BEES AND QUEENS, AND WHITE AND BROWN FERRETS, ADDRESS

N. A. KNAPP,

ROCHESTER, LORAIN CO., O.

TAKE NOTICE!

BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH,
14tfdb New London, Wis

Warranted Golden Queens,

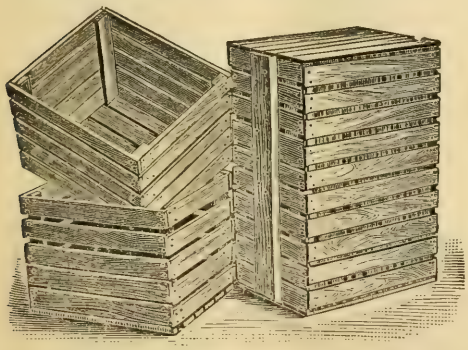
80c; 6 for $4 25; dozen, $8.00; young tested, $1.00 up. Write for prices on select and breeders.

J. B. CASE, Port Orange, Vol. Co., Fla.

BEE-HIVES AND SUPPLIES

Send for catalogue free. Address **SAMUEL JONES,** Highland Park College, Des Moines, Iowa. 1-19db

BUSHEL BOXES.



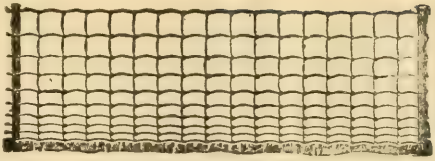
The above cut shows our new-style *all-slatted bushel box.* We have two other styles; one has slatted bottom and sides with solid ends in three pieces called the *slatted bushel box.* The other has solid ends and close bottom and sides, and is bound with galvanized iron and called the *galvanized bound box.* These boxes were devised by T. B. Terry for handling potatoes, for which purpose nothing could be handier. The potatoes are picked up into the boxes in the field and left in them till sold. Other crops, such as cucumbers, tomatoes, and apples are being handled in these same boxes. They are of such a size that two go crosswise in an ordinary wagon-box. Outside measure is 14¼x16⅞x12½ deep, and they hold a bushel of potatoes level full so they can be piled one upon another. The above cut shows two *all-slatted* boxes nailed up, and a bundle of 15 alongside; 13 of the 15 are in the flat, packed inside the other two, and nails of the proper kinds are included. The *slatted* and *galvanized bound* boxes are put up in the same way, except there are only 12 in a package instead of 15. Each package weighs about 85 to 90 lbs.

PRICE LIST.

All-slatted bushel box, per crate of 15..... . $1 50
Slatted bushel box, per crate of 12..... ..1 50
Galvanized bound bushel box, per crate of 12....2 10

In lots of ten crates, 5 per cent discount will be deducted. Price each, nailed, 15, 18, and 22 cents, respectively. A 20-page pamphlet called Handling Farm Produce, telling all about these boxes, mailed free on application.

A. I. ROOT, Medina, O.



Elasticity

Having been proved indispensable in a good wire fence, our competitors are drawing on their imagination for a supply. We have a simple test, which will prove that ours has more than all others combined.

PAGE WOVEN-WIRE FENCE CO., Adrian, Mich.

☞In responding to this advertisement mention GLEANINGS

Found at Last.

Jennie Atchley has found at last a place where she can raise *good* queens all the year round. Northern dealers, please take notice and arrange for your queens early. Fine breeders booked now for spring delivery, $5.00 each; or, if paid in advance, $4.50. Can send you nice untested queens for $1.00 any day in the year. Safe arrival and satisfaction.

MRS. JENNIE ATCHLEY,
Beeville, Bee Co., Texas.

P. S.—Remember, I have as fine stock Italian bees as are to be found.

GOOD NEWS TO THE HELPLESS.

For illustrated catalogue of **INVALID-LIFTER** by which a child can tenderly lift you to and from Chair, Bed, Bath, Carriage, turn over in bed, hold in reclining position, or on a stretcher until your bed is made. **A. BEESON, Loveland, Colo.**

OTTUMWA BEE-HIVE FACTORY.

Bee-keepers, look to your interests. Every thing in the line of bee-supplies constantly on hand. Price list free. **GREGORY BROS. & SON,**
1-23o Ottumwa, Ia. South side.

Cash for Beeswax!

Will pay 21c per lb. cash, or 24c in trade for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 28c per lb., or 30c for *best selected wax.*

Unless you put your name *on the box,* and notify us by mail of amount sent, I can not hold myself responsible for mistakes. It will not pay as a general thing to send wax by *express.*

A. I. ROOT, Medina, Ohio.

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SPECIAL NOTICES.

Choice extracted honey wanted. Send samples.

FIVE PER CENT DISCOUNT.

Forehanded bee-keepers are already beginning to plan for next season. Many know now, or will very soon, many things they are sure to need. It will be to your interest to get your order in before Dec. 1st; for, during the time intervening before that date, we allow 5 per cent discount from our catalogue prices, pages 10 to 30, on goods ordered for next season. This applies also to hives of all kinds, and winter cases, but not to honey-packages and shipping-cases for immediate use.

HONEY MARKET.

We are still filling orders for choice comb and extracted honey at the same prices as heretofore; viz., choice comb honey in 1-lb. sections, in lots of 100 lbs. or over, 16c per lb. We have a little dark or buckwheat honey that we will sell at 13c, or, for a full crate of about 200 lbs., 12c. Choice extracted honey, in 60-lb. cans, two in a case, 8½c per lb.; two cases or over, 8c. Single can, 9c. Comb honey in lots of 100 lbs. or more is crated so as to reach destination safely by freight.

VEGETABLE-PLANTS FOR NOVEMBER.

If any of our friends in the South or anywhere else want onion-plants we can furnish them nice White Victoria, Prizetaker, or American Pearl, for 15 cts. per 100; $1.00 per 1000, or $7.50 per 10,000 plants. If wanted by mail, add 10 cts. per 100 extra for postage.

GRAND RAPIDS LETTUCE-PLANTS.

If any of you neglected to sow seed for plants in September, we can give you nice transplanted ones for 5 cts. per 10; 40 cts. per 100; $2.50 per 1000. If wanted by mail, add 25 cts. per 100 for boxing and postage. Seedling plants, directly from seed-bed, half above prices.

Horseradish-roots, 25 cts. per 100; $2.00 per 1000. If wanted by mail, add 20 cts. per 100 for postage.

Horseradish we think perfectly safe to put out in the fall; in fact, horseradish will grow at almost any time and under almost any circumstances.

PRICE OF FREEMAN POTATOES FOR NOVEMBER, 1893.

LARGE AND MEDIUM SIZE.

1 lb., by mail, 25 cts.; 3 lbs.	$ 60
1 lb., by freight or express with other goods	10
1 pk., " " " "	75
1 bush., " " " "	1 75
1 bbl. (11 pecks), " " " "	4 00

SECOND SIZE.

1 lb., by mail, 20 cts., postpaid; 3 lbs.	$ 45
1 lb., by freight or express with other goods	07
1 pk., " " " "	40
1 bush., " " " "	1 25
1 2-bushel sack, " " " "	2 25
1 bbl. (11 pecks), " " " "	3 00

SECOND SIZE.

In regard to the size of these, I picked 14 potatoes at random out of the sacks, and they weighed just 1 lb.; and they run so evenly all through that I think there will not be very much variation. Take out 14 nice smooth potatoes of your own, that weigh just 1 lb., and you have a fair idea of the size. As I have said before, these make a very nice table potato if you bake them skins and all.

THIRD SIZE.

These were sifted out, with a suitable screen, from the second size. They run from an inch in diameter down. The only reason why we saved them was, that there has been such a demand for Freeman potatoes a great many would have been glad to get any thing, to get a start. I do not know how they will answer for seed, as I have never tried any so small. With very rich ground, however, I have no doubt that they will make a good yield. I should think they would be very good for sending by mail. We have only four or five bushels. While they last, the price will be, 1 lb. by mail, 15 cts.; 1 lb. by express or freight with other goods, 5 cts.; peck, 25 cts.; bushel, 75.

By the last *Practical Farmer* I see that Wm. Henry Maule states, "We are now booking orders for Freeman potatoes, for fall shipment, at $5.50 per barrel. Price for spring shipment will be $7.50 per barrel." You will notice he takes this plan to avoid the great rush and crowd and disappointment in the spring. I can not tell how long we shall be able to maintain the above prices.

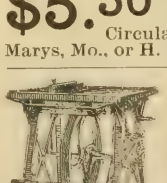
PRICE OF OTHER POTATOES FOR FALL SHIPMENT.

We can furnish the following kinds of potatoes besides the Freeman: Early Ohio, Early Puritan, same prices as Freeman; Lee's Favorite, Beauty of Hebron, Monroe Seedling, Rural New-Yorker, at the following uniform prices: 1 lb. by mail, 25 cts.; 3 lbs., 45 cts.; 1 lb. by express or freight with other goods, 7 cts.; peck, 40 cts.; bushel, $1.25; 1 bbl. of 11 pecks, $3.00. Judging from former experience, we feel quite sure that most if not all of the above will be much higher next spring. Second size of any of the above, while we have them, by the peck, bushel, or barrel, half the above prices.

FLORIDA. For sale, 75 hives of bees; inquire of AUG. LEYVRAZ, Francis, Fla. 19tf

VANDERVORT
COMB-FOUNDATION MILLS.
Send for samples and reduced price list.
1tfd **JNO. VANDERVORT, Laceyville, Pa.**

$5.50 **For 3,** or $10.00 for 6, Finest Brown Leghorns, or Plymouth Rocks. Other varieties. Circular free. Address GEER BROS., St. Marys, Mo., or H. B. GEER, Nashville, Tenn.



Read what J. I. PARENT, of CHARLTON, N. Y., says—"We cut with one of your Combined Machines last winter 50 chaff hives with 7-inch cap, 100 honey-racks, 500 broad frames, 2,000 honey-boxes, and a great deal of other work. This winter we have doubled the amount of bee-hives, etc., to make, and we expect to do it all with this saw. It will do all you say it will." Catalogue and Price List free. Address W. F. & JOHN BARNES, 545 Ruby St., Rockford, Ill.

When more convenient, orders for Barnes' Foot-Power Machinery may be sent to me. A. I. ROOT.

DOVETAILED HIVES, SIMPLICITY HIVES,
SECTIONS, EXTRACTORS, ETC.
FULL LINE OF
BEE-KEEPERS' SUPPLIES.
60-PAGE CATALOGUE. 1tfdb
J. M. JENKINS, WETUMPKA, ALABAMA.
☞In responding to this advertisement mention GLEANINGS.

HONEY COLUMN.

CITY MARKETS.

CHICAGO.—*Honey.*—The limited demand for comb honey does not permit our quoting it above 16c, with no sales of white selling below 14@14½. The stock that we have received this year is of fine quality, and we advise forwarding to market at once, so as to be received here before the cold weather sets in. Extracted is selling at 6@6½. Beeswax, 23. S. T. FISH & Co.,
Oct. 18. 189 South Water St., Chicago, Ill.

MINNEAPOLIS.—*Honey.*—The honey market is improving, and the best grades are advancing. Extracted honey is moving quite freely at 7@8, according to quality and size of packages. Dark honey is slow. In 1-lb. sections, fancy white, 17@18; choice white, 16; fancy dark, 14; choice dark, 11@12. Extracted in 20-lb. tubs, 8; in kegs, 7½; in barrels, 7.
J. A. SHEA & Co.,
Oct. 21. Minneapolis, Minn.

CINCINNATI.—*Honey.*—Demand is fair for best white comb honey at 14@16 in the jobbing way. There is a slow demand for extracted honey at 5@8 on arrival. Time-killing of demagogues seems to bear heavy on all kinds of manufacture. There is a fair demand for beeswax, at 2 @23 on arrival, for good to choice yellow. CHAS. F. MUTH & SON,
Oct. 23. Cincinnati, O.

ALBANY.—*Honey.*—Market firm for comb honey, although receipts have been liberal. We never had freer sales of comb honey than this season. Extracted doesn't sell so well. We are selling white comb, fancy, 15@16; medium, 14@15; mixed, 12@13; dark, 11@12. H. R. WRIGHT,
Oct. 17. 326, 328, & 330 Broadway, Albany, N. Y.

KANSAS CITY.—*Honey.*—The demand is improving. We look for still better demand as the weather gets cooler. We quote: No. 1 white comb, 15@16; same, No. 2, 13@14; No. 1 amber, 14@15; No. 2 amber, 12@13; extracted, white, 6@7; amber, 5@6. Beeswax, 20@22. CLEMONS, MASON & Co.,
Oct. 18. Kansas City, Mo.

KANSAS CITY.—*Honey.*—Honey in fair demand. Supply good. No. 1, white comb, 15@16; amber, 14@15; extracted white, 6@7; amber, 5½@6; dark, 5. Beeswax, demand light, supply fair, price 20@22.
HAMBLIN & BEARSS,
Oct. 23. Kansas City, Mo.

BUFFALO.—*Honey.*—The market remains very quiet. Fancy mostly sustained at 14@15; choice, 12@13. Poorer grades, 9@11; buckwheat, 8@10. The market is very quiet, and demand light.
BATTERSON & Co.,
Oct. 18. Buffalo, N. Y

ST. LOUIS.—*Honey.*—Markets continue quiet, and until cold weather we anticipate no improvement in the honey situation. Stocks are ample for current wants, and prices remain unchanged.
D. G. TUTT GROCER Co.,
Oct. 20. St. Louis, Mo.

DETROIT.—*Honey.*—Comb honey in good demand, and selling at 13@15; the latter for fancy white. Extracted, 7@8; beeswax, 23@24.
Oct. 20. M. H. HUNT,
Bell Branch, Mich.

CLEVELAND.—*Honey.*—Demand for No. 1 white comb honey is very firm at 16; No. 2, 13@14. Beeswax, nice yellow, is selling at 25@26c.
WILLIAMS BROS.,
Oct. 18. 80 & 82 Broadway, Cleveland, O.

BOSTON.—*Honey.*—We quote our market on comb honey as fairly active; best 1-lb. comb selling 14@15. Extracted selling slow, 6@7. BLAKE & RIPLEY,
Oct. 21. Boston, Mass.

FOR SALE.—About 800 lbs. of white-clover honey in 1-lb. boxes, packed in 24-lb. single-tier cases, at 14c per lb., delivered on cars. WM. VAN AUKEN,
Woodville, Jeff. Co., N. Y.

FOR SALE.—White extracted honey, in kegs of 200 lbs. capacity. WARD LAMKIN, Goodyears, N. Y.

FOR SALE.—2000 lbs. of fine comb honey, in 1-lb. sections, 24-lb. cases, and 2000 lbs. of clover and basswood honey, in 60-lb. square jacket cans. Sample of extracted honey by mail on application.
EZRA BAER, Dixon, Illinois.

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TO exchange.—Bicycles, 56-inch Champion, 52-in. Eagle. Will exchange either for 120 lbs. of good extracted honey. Send sample. Also severa good safeties to exchange. J. A. GREEN, Ottawa, Ill.

WANTED.—To exchange fruit-trees for harness, single and double. GEO. GOULD & SON.,
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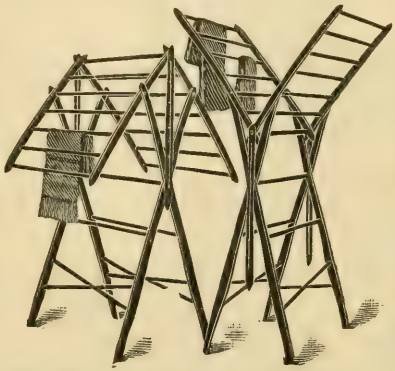

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C. W. VANHOUTEN, Smithfield, Ill.
21, 23d

Remember, This is the last month for the 5 per cent early-order discount. *H. G. Acklin*, Northwestern Ag't for A. I. Root's goods, St. Paul, Minn.

FOR SALE, Nov. 3, at New Milford, O. 125 Colonies of Bees, with hives; 90 Bee-hives, 40 Shipping-cases; 86 Bee-houses; Queen-nursery, Honey-extractor, 26 Feeders, etc.
Mrs. M. L. Bingham, Admix., Rootstown Sta., O.

WANTED.—BEESWAX.—Will pay highest cash price for same.
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You Ought to Know

whether it is profitable to use foundation in the brood-nest when hiving swarms, and which is the more profitable, large or small swarms. Extensive and elaborate experiments have been made upon these points the past season at the Michigan Experiment Apiary, and a report appears in the Oct. REVIEW. The reading of this report may be a surprise to some. The publishing of these reports is one of the best things the REVIEW has ever done. I am sincere when I say that no bee-keeper can afford *not* to read them. They began in July, and the REVIEW will be sent from that time to the end of the year for 75 cts., and with it will be sent the 50-cent book, "ADVANCED BEE CULTURE."

W. Z. HUTCHINSON, Flint, Mich.

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Sole Manufacturers, Sprout Brook, Montgomery Co., N. Y.

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We will send the **Bee-keepers' Enterprise** from now until Jan., '95 (16 months), for 50 c.; or 3 months for 15 cts. You will be pleased with your investment, in either case.

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To introduce it, one in every county or town furnished reliable persons (either sex) who will promise to show it. Send at once to **Inventors Co., N. Y. City, P. O. Box 2252.**

Notice to Jobbers

G. B. Lewis Co., Watertown, Wis.,

Invite all Wholesalers and Jobbers of Bee-Keepers' Supplies to write them for contracts for Hives and Sections the coming season. . . .

1tfdb Please mention this paper.

BIG DISCOUNT on Foundation and Sections. Thin foundation, 50 cts. per lb.; brood, 40 cts. No. sections, $2.75 per M. Every thing cheap, price list free. E. H. TRUMPER, Bankers, Mich.

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GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
PUBLISHED BY A. I. ROOT
$1.00 PER YEAR MEDINA OHIO

Vol. XXI. NOV. 1, 1893. No. 21.

STRAY STRAWS

FROM DR. C. C. MILLER.

ST. JO is the place for the next pow-wow.

NOW BEGIN to polish up hopes for next year.

HAULED HOME last bees from out-apiaries Oct. 19. The later the better, so they get one good fly after hauling before going into cellar.

NEVER BEFORE, I think, were so many bee-keepers assembled in one place in this country as at the convention at Chicago. When shall we see the like again?

GALLUP is on the war-path, in *A. B. J.*, with the vigor of old, giving heavy blows against extra light-colored bees, quoting Adam Grimm and Chas. Dadant as backers.

THE PREVAILING IDEA, that bees carry ants away from the hives and drop them, E. S. Lovesy says in *A. B. J.*, is a mistake. He says the ant grabs the bee and never lets go till the bee gives up in death, no matter how far it flies.

WHICH END FOREMOST should bees go when being put into a cage? I always supposed head foremost was the orthodox way; but friend Graham, of Texas, told me he saw the young folks at Mrs. Atchley's putting them in very rapidly tail foremost.

"PSZCZOLA," the Polish word for "bee," is "put out" for me to spell, in *C. B. J.* Not much, friend Wilkins; I've no notion of going around with a broken jaw. Possibly I might try it if the last half of the word had its vowels extracted, so as to be like the first half.

HASTY, in *Review*, seconds Phin's dictionary in objecting to the use of the word *hatch* as applying to any thing except hatching from the egg; instead of *hatching* brood, *emerging* brood being the proper term. He's undoubtedly right, unless a better word than *emerge* can be suggested.

HONEY is of a gallant cleansing quality, exceeding profitable in all inward ulcers in what part of the body soever; it opens the veins, cleanses the reins and bladder. I know no vices belonging to it, but only it is soon converted into choler.—*Nicholas Culpeper*, A. D. 1653.

HOW EASY it is to make a wrong impression! I find that I have given the impression that I got a big crop of honey this year. I didn't. A fine flow of honey is one thing, and a big crop quite another. The fine flow was here, but I didn't get the big crop. Hadn't the bees. Died last spring.

ONE TROUBLE with the Chicago convention was, that there were so many there that one hadn't time for half the visiting he wanted to do with each one. Some that I'd been wanting to see for years were there, and I'd only time for a few words with them; and the same with many old friends.

PITY every thing in the bee-keeping line could not have been in one place at the World's Fair. Many bee-keepers never saw the fine honey from England, it being in the British exhibit among other things, and there were other interesting apiarian exhibits scattered over the grounds.

ANTS, according to E. S. Lovesy in *A. B. J.*, are kept out of hives by setting the hives on posts. He paints a two-inch ring around each post, putting on two or three coats of tar as a body, then a mixture of equal parts of lard, axle-grease, and tar, with one-ninth white lead, renewing if necessary.

KILLING BUMBLEBEES, according to a correspondent of the St. Louis *Globe-Democrat*, is a laudable enterprise, and he somewhat gleefully tells how a farmer destroyed several colonies. But after that farmer gets all the bumblebees killed off, he may wonder why his red clover doesn't seed any better.

A SWARM-ANNOUNCER is described in *Centralblatt*. It is a patent electrical arrangement. An entrance of $\frac{5}{16}$ is allowed, over which hangs a swinging gate, and the swarm crowds open this gate and sets a bell to ringing in the house or office. Non-swarmers and self-hivers must fail in this country before announcers get a hearing.

AUSTRALIA, as represented by J. W. Pender at the convention of Chicago, must be a land flowing with honey, however it may be with milk. Think of an average yearly crop of 224 pounds extracted to a colony, with a price of 5 to 8 cents a pound! But even at that rate it would take the proceeds of a good many colonies to bring a man 12,000 miles to a bee-convention.

ELIAS FOX, on page 782, says government helps farmers in protecting domestic animals against diseases, and seems to think that's all. Why, what is there in the line of farmers' work that government has not experimented on? Full particulars as to how and when to plant potatoes, how far apart, which end of the potato for seed, how many eyes, etc., and so of every crop the farmer raises—except honey.

CUCUMBERS don't give bees cholera morbus in this region, Bro. Pryal (see p. 781)—at least, I don't see them going around doubled up with

their hands clasped below their waists any more when cucumbers are in bloom than at any other time. But I am sorry to say that, after several years' experience, I am losing faith in the cucumber as a honey-plant. With four or five hundred acres around Marengo this year, I have seen no very marked results.

VARIOUS DEVICES have been discussed for carrying bees, and some of the brethren have rather scoffed at the idea, saying that, when you wanted to carry a hive of bees, the way was just to pick it up and carry it. I could sympathize with their views as I watched my son, a stout young fellow, loading and unloading bees with no straps, ropes, or other device, this fall, doing it rapidly with apparently little effort; and for him, that's the best way. But, alas! we don't all have the strength.

TWO NUCLEI IN ONE HIVE.

UNITING, ETC.

If the reader will turn to page 252 of the April 1st number of GLEANINGS for this year he will find these words: "As this article is already long enough, I will tell some other time how I keep two nuclei in a hive, how I double them for winter, etc.," at the close of my article entitled, "What Size of Frame shall we use in Queen-rearing?" It had nearly slipped my memory during the hurry of the summer months; but I guess this article will be in time for the larger part of our queen-rearers, as the most of these live farther south than I do, and I have only just finished uniting my nuclei. Several years ago I made a lot of hives especially for working with the side and top storing plan combined, for comb honey, as was given to the readers of GLEANINGS at the time. These hives were two feet long inside, but the brood-chamber was cut down to the size I wished by using a thin slotted partition, five inches from either end, the side boxes being used in this five-inch space. After I adopted the lateral plan of working for comb honey, given in later numbers of GLEANINGS, I had no use for these hives for comb honey, so I thought to use them for nucleus hives by tearing out the partitions at either end and putting in a thin partition in the middle, the same being solid except a hole bored in the center of this partition-board, said hole to be filled with a plug except at times of uniting. The nuclei, when formed, were placed next to this thin partition, with the entrance at the opposite side at the bottom to prevent robbing, as I gave in that article in April 1st GLEANINGS In this way each nucleus helped to keep the other warm, and I found that fewer bees would answer for a nucleus in these hives than in those where only one nucleus occupied the whole hive. These nuclei would also build up faster, so that by fall I should, as a rule, have frames of comb and honey built during the season, to an amount sufficient to winter a fair colony of bees; and when the two were put together, the bees would make the fair colony desired. In this way I have half the number of good colonies of bees in the fall that I start nuclei in June, which is an item worth looking after, I assure the reader. When I have decided not to rear more queens, the queens from one side of these double hives are taken to fill orders, and in a day or two the plug is removed from the hole in the thin partition-board, which allows the bees to pass backward and forward as they please, thus becoming acquainted with each other without any danger to the remaining queen. In five or six days after taking out the plug, the whole are taken out of this hive and set over into a chaff hive and fixed for winter, allowing the chaff hive to remain on the stand occupied by both nuclei during the summer, while the double or nucleus hive is put away till another season. In this way I have my nuclei united without the loss of a single queen or bee, and no trouble about the bees returning to their former stand; and, as far as I can see, they winter just as well as will any colony of the same size.

But it sometimes happens that I am obliged to use more nuclei than these double hives will accommodate, when I use other hives which will accommodate only one nucleus, as has been the case this year. These have to be united for winter also; and as they are nearly always the last formed, and do not build up as fast as those in the double hives, I have to put three or more together to make a colony of suitable size for wintering.

All are familiar with the old ways of uniting bees by drawing the colonies to be united a little nearer each other every day till both occupy the same stand, so that none are lost by returning to the old location, so I will not describe the method more fully here, but will simply say that this was always too much work for me; and to overcome it I have used various ways, such as shutting the bees in their hives, and pounding on the same till they were so scared that they were willing to mark their location anew, when as many as were to be united to form one colony were wheeled together, and all put into one hive. This worked well, but was still too much work; so I brought out the following, which I have used with perfect success the past three years:

When it has been decided not to rear any more queens from certain nuclei, they are prepared for uniting, when taking their queens away, by taking all but two or three frames away from them, if they happen to have more, these frames being placed in the center of the hive, and spread from half an inch to an inch apart, according to the number of bees the little colony may have, making it a point to leave the frames having the most honey in them, so that the united colony may have honey enough for winter.

To unite, we wait till some cold cloudy day, or some morning when there has been a slight frost, or when it is cold enough so the bees have clustered compactly together on the frames we left with them. The object of spreading the frames apart when we prepared them for uniting was, that the bees might cluster on the combs in such shape that they would not touch the hive in any place; for if they do we shall of necessity leave a few bees sticking to the hive; but if spread apart properly, the combs and bees may be taken out without leaving a single bee behind, and carried to the place of uniting, and set right in the hive where we wish. To do this, carefully remove the cover from the hive where the queen has been left, and where the united colony is to stand, so that there need be no delay when we come with the other frames of bees; then go to one of those prepared as above, carefully remove this cover also, when we put the index finger and the finger next to it between the frames, closing upon each side with the other fingers and thumb, when the whole are lifted—combs, bees, and all, and carried where we wish, and set in the hive with hardly a bit of disturbance. It is well to have a veil on, and smoke handy, should they be needed by any blunder of ours; and it is well to keep the cover over the combs in the united hive as fast as set in, else some of these bees will be apt to fly out at us when bringing the next lot of combs. Remove the empty hives from their places so the bees need not find them

on the old stand, and none will go back to be lost.

This is by far the easiest and quickest way of uniting bees which I know of, and in all of my practice no queens have been killed, no fighting resulted, and no bees lost by adhering to the old stand. G. M. DOOLITTLE.

Borodino, N. Y., Oct. 18.

[We have been using for queen-rearing an ordinary 8-frame Dovetailed hive. A thin, tight-fitting division-board, that may be removed easily when desired, divides the hive lengthwise through the middle. A nucleus is put in each compartment, with an entrance to each—one at each end of the hive. This sort of hive economizes the heat of the two nuclei, as Doolittle says. In fall we draw out the division-board and let the nuclei unite. The plan so far is very satisfactory.]

MR. THOMAS B. BLOW, F. L. S.

ENGLISH APICULTURE ILLUSTRATED.

A GLIMPSE OF THE MANNER IN WHICH OUR ENGLISH COUSINS MANAGE BEES; THEIR HIVES AND GENERAL APPLIANCES; AN INSIGHT INTO ONE OF THEIR LARGEST BEE-HIVE FACTORIES.

Continued from page 775.

We take great pleasure in introducing you to our friend Mr. Thomas B. Blow, a bee-keeper and dealer in supplies in England, of no ordinary distinction. As he probably has the largest supply-establishment in England, it is with special pleasure that we are able to present him to our readers. We will now make an extract from that delightfully written article referred to in last issue from Arthur Smith. Indeed, we believe we will let him tell all the rest of the story.

Born at Welwyn in 1853, Mr. Thomas B. Blow soon advanced to the front rank of progressive bee-farmers. The actual manipulation of bees was commenced by him at the age of fourteen, when he accomplished the delicate task of taking up twenty stocks in straw skips by means of an improved method of applying the sulphur fumes, and using a pair of common house-bellows, with a hollow ball in the nozzle containing the burning sulphur. The idea of saving the bees' lives was then being entertained, and very soon afterward he made his first wooden hives with his own hands, beginning with driven bees with very successful results. These hives were built on the Woodbury principle, being rather massive and cumbrous, weighing one hundredweight. Year by year increasing interest was taken in bee-keeping, and we soon find Mr. Blow laying the foundation of his present large business by commencing the manufacture of appliances.

Mr. Blow was one of the first to take the position of an expert, and in this capacity he assisted the late Mr. Peel in the active work of organizing the Hertfordshire Bee-keepers' Association. Many pleasant years of work were carried on without a hitch, until the death of Mr. Peel in 1887. This partnership with his colleague was made by Mr. Peel more especially to promote the industry in the county of Herts, though he himself actively assisted, by means of lectures, etc., to form several similar associations in other parts of the kingdom. At the end of three years the Hertfordshire Association numbered several hundred members; it was referred to everywhere as a model for others, the secret of success being the individual attention given to

MR. BLOW'S BEE-HIVE WORKS AND APIARY AT WELWYN.

each member, and it usually occupied two months to make an expert tour of the county.

A rapidly increasing business demanding more and more personal attention, combined with the fact that, after Mr. Peel had ceased to be connected with the H. B. K. A., Mr. Blow was not in touch with his successors, caused the latter to resign his position. He was one of the very few who ever produced one-piece sections in this country, most elaborate machinery having been designed by him and put down at Welwyn for this special work, one machine alone costing £200. After a somewhat lengthy trial it was found that our native woods were unsuitable for competing with American timber, so this part of his industry was abandoned. Mr. Blow has also designed—as most bee-keepers are aware—a number of important improvements in bee appliances, for which he has received many medals. His mind was, however, quite as much concerned in the study of the bee itself, and, on hearing the fame of Oriental bees, he determined to verify or disprove the many laudatory reports concerning them. With this view he made several journeys to the Mediterranean—principally to North Africa, Malta, Cyprus, Syria, and Egypt. After collecting and bringing home, at the expense of a vast amount of time and money, upward of one hundred stocks from these districts, one season's experience convinced him that the usefulness of Oriental bees in this country was *nil*, so he promptly abandoned their importation; and, although some persisted in singing their praises, they were ultimately obliged to accept the same conclusion. His next journey was undertaken with a view to inquire into the merits of Carniolan bees, and after a month's investigation in Carniola he was convinced that all that had been said in their favor was well founded. In this district the front of each hive bears a pictorial representation of some sacred, allegorical, or humorous subject, and Mr. Blow has in his possession a small collection of hives so painted. He has traveled through Canada and the United States for the purpose of inspecting the American system of honey-raising. The detailed results of these expeditions have been published by Mr. Blow in an illustrated pamphlet, which contains not only much valuable matter, but many interesting reminiscences.

From quite early years Mr. Blow has taken a deep interest in Natural History, especially Botany, one of his first published works being entitled, "Contributions Toward a Flora of the Neighborhood of Hitchin." To Pryor's "Flora of Hertfordshire," published by the Hertfordshire Natural History Society, he is probably the largest contributor, with the exception of the editor, and his extensive collection of British dried plants is included in the Herbarium of the University of Edinburgh. The *Journal of Botany* contains numerous contributions from his pen, and several articles by him have appeared, from time to time, in the *Flora de l'Ouest de la France*. For his valuable services in botany he was elected a Fellow of the Linnæan Society, at the meetings of which he is generally present. Like other busy men, Mr. Blow finds time to attend to local matters, and is one of the Guardians for the parish in which he lives.

It is on a lovely summer's day early in May that, after an enjoyable drive through some of the most beautiful of Hertfordshire scenery, an artist friend and myself arrive at Mr. Blow's new works adjoining Welwyn Station. We are at once struck with the suitability of the situation, as, in consequence of its contiguity to the Great Northern main line, all railway passengers can not fail to notice the works and hives. The erection of the new works, cottages for men, residence for himself, in addition to the removal and relaying down of the large quantity of machinery, transportation of several hundred hives of bees, laying out the apiary and planting it with many thousand fruit-trees, etc., etc.—all this has been accomplished and the place put into working order within twelve months—a fact which says much for Mr. Blow's energy and enterprise.

On entering the works where forty hands are employed all the year round, Mr. Blow first conducts us to the portion of the factory devoted to hive-making. Here are twelve different wood-working machines, and a number of men busily putting together the hives, which will soon find their way all over the world. The first element in the success of bee-keeping is a properly constructed hive; and not only this, but one that will withstand climatic influence. The latter *desideratum* can be obtained only by having it made of the best seasoned wood, and, in order to secure this, Mr. Blow never works up any wood until it has been stacked in his own sheds for at least three years. A hive badly constructed in the first instance, or which has been made of "green" wood, is often the cause of people giving up bee-keeping in disgust. The latter kind of hive gives every encouragement to "propolizing," and when manipulation is attempted the removal of frames, etc., is attended with difficulty;

considerable force has then to be used, frames and combs are broken, hives are jarred, and the operator is compelled to act more like a burglar breaking into an iron safe than any thing else, with the result that the bees are thoroughly maddened with rage, and their owner soon brought into a similar condition. On the other hand, with every thing properly fitting, there need be no more fuss required in taking out a few frames or sections from the hive than books from a library shelf. Of course, the old-fashioned straw skeps are now little used, although the demand is (much to our surprise) sufficiently great as to cause Mr. Blow to employ a man regularly in making them.

The greatest departure that modern bee-keeping has made from the old method is in the use of wax "foundation," to the manufacture of which we are next conducted. This is here produced with as much care as butter in a model dairy factory; the thermometer is used at every operation, the quality and general satisfactory nature of the complete "foundation" being dependent on the temperature at which the melting, dipping, and rolling are accomplished. The larger portion of the wax used comes from abroad, as the production of English wax is necessarily limited; Madagascar, Chili, and India each sending a considerable quantity. African wax is often adulterated in a unique manner by the natives, who suspend blocks of quartz or other heavy rock into the melting-pot with the wax, which, of course, can not be discovered until the block of wax is remelted or broken. Australians (*not* the aborigines) adulterate the wax itself by melting mutton-fat with it. Mr. Blow, however, takes good care that nothing but pure wax be used on his premises. That from India is colorless, the absence of color being due to bleaching, and it is used to lighten the hue of the darker wax in making "super foundation."*

Mr. Blow's arrangements for the manufacture of foundation are on the newest and most elaborate scale. The wax is first melted by steam in a large cauldron, so that it is impossible to exceed a certain temperature, and during this process it is clarified, after which it is strained into a deep, oblong vessel, where it is still kept in a liquid state by steam. The sheets are prepared by dipping smooth wooden boards (which have been previously dipped in water of a temperature of 60° F. and drained) into the melted wax and quickly withdrawing them, and then the sheet of wax is readily stripped off. The next process is to impress each sheet with the *facsimile* of the basis of the cells, and this is done by first placing it in a trough containing water at a temperature of about 100° F., then passing it through embossed rollers, the latter being heated to a temperature of 70° F. Mr. Blow dispatches twenty tons of foundation per annum, and is proud of the fact that there has never been a complaint as to its quality. There is a great deal of adulterated foundation in the market, which appeals to some by reason of its *apparent* cheapness, but those who have tried it soon discovered that, in comparison with the pure wax, it is dear at any price.

On the same floor we are shown several metal-working machines, most of them having been designed by Mr. Blow. Metal section-cases, of which a quarter of a million are now turned out yearly, pass through several of these machines. The "smokers" are made of tinned steel, with the best quality of morocco for the bellows. Some idea of Mr. Blow's connection can be imagined from the fact that, up to the present, he has sold between forty and fifty thousand smokers; and as each of these, with fair usage, will last many years, it is fair to assume that nearly every order for a smoker comes from a fresh customer. In this department we see excluding zinc, dividers, metal tops for feeding-bottles (for the use of bees, not babies), and various other metal fittings.

Mr. Blow shows us, in passing, his simple gas-making apparatus, which turns out splendid gas at the cost of 5*s*. per thousand, the price charged by the Welwyn Gas Company being the extraordinarily high one of 6*s*. 8*d*. per thousand.

On the next floor we find the making of bar-frames in full swing. Here are tiers of crates containing glass bottles, "sections," etc., and at one side are stored bee-appliances of all kinds, too numerous to mention. For the past twelve years an annual average of one million sections has been

*"Foundation" is mainly divided into two kinds, brood and super, the difference being in the color and thickness of the sheets.

THE FACTORY—MAKING BAR-FRAME HIVES AND BEE-KEEPING APPLIANCES.

sent out from these works. We are much pleased with Mr. Blow's new patent section. Among apiculturists it is well known that for some time attempts have been made to introduce sections with glass dividers, so that, after these sections were filled with comb, they could be removed with the glass attached, and thus be ready glazed for market. Previously the great drawback was that the glass has always been inserted in grooves, so that, when the honey was completed, the glass could be removed for clearing only with difficulty, and was often broken. To send sections to market with the glass soiled by the constant traffic of the bees over it would reduce their chances of finding a ready sale. After numerous trials, Mr. Blow devised an ingenious expedient—one so simple that, as he said, it seemed surprising that it should not have been discovered before. A rebate is made in the corners of the section, so that the glass has only to be dropped into position, and, when the section is full, the glass is easily lifted out, cleaned, and replaced, while a neat label all round not only affords a suitable finish but keeps the glass in its proper place. Each section has to pass through eight different machines during its manufacture.

Next we come to the packing and forwarding room, from which a large truck is being loaded. Mr. Blow's goods find their way to many parts of the world, substantial orders often coming from the Cape, and a few days before our visit a large selection of appliances had been ordered for the Khedive of Egypt.

The question of railway rates is one in which Mr. Blow is naturally much interested; and if any material rise take place it will have the effect of considerably checking, if not wholly annihilating, this industry.

As an adjunct to his other business, Mr. Blow has established a large trade in bundles of firewood. A considerable number of boys are employed during the busy season in the spring and summer for whom it was impossible to find labor during the winter. To obviate the necessity of throwing them out of work, Mr. Blow hit upon the expedient of thus utilizing the waste wood from the factory; but as it is of all shapes and sizes the cost of cutting and tying into bundles proved to be much greater than the completed bundles could realize. Therefore, in order to make any profit, it was found necessary to carry it out much more extensively, and, accordingly, special machinery was put down and wood purchased for the purpose. About 20,000 bundles are turned out per week, a smart boy tying 1000 bundles per day, and earning from ten to twelve shillings a week. These boys are thus kept in employment all the year round, and the bundles they produce are dispatched in truck-loads to all parts of the county.

Descending to the ground floor we pass out into a detached workshop where the metal ends for the bar-frames are being cast. Here we find a very simple and ingenious arrangement for melting and molding the metal by means of an oil-lamp, the burner of which, being constructed on the Bunsen principle, burns with a blue frame, and is capable of melting 40 lbs. of metal per hour. The mold is held in the hand of the operator, who lets in the molten metal, opens the mold, and turns out the complete ends as quickly as shelling peas.

MAKING STRAW HIVES.

We now visit the bees, for whose assistance the hive of industry we have just inspected is kept going. Between two and three hundred hives are placed on a gentle slope and arranged in horseshoe form, while between each row of hives there is a gravel walk and border planted with fruit-trees, among which have been sown seeds of honey-producing flowers. It has a southern aspect, and is situated a few hundred yards above the river Mimram, which meanders through the lovely valley. In a season like the present the proximity to the river is very important to the bees, as in any season they must have water. Altogether, it does not seem possible to design an apiary in a more perfect manner.

Among the fruit-trees are several hundred gooseberry bushes from one to two feet high, and which cost a penny each last autumn. They are absolutely laden with fruit, many of them containing as much as two quarts, thus strikingly exemplifying the value of bees to fruit-growers. The presence of a few hives—the more the better—in the vicinity of fruit gardens and orchards is not simply a benefit to the grower, but is a matter of the first importance; and those who wish to secure the nearest approach to constantly recurring profitable crops

will find it an absolute necessity to encourage the presence of the honey-bee.

The stock of bees at the time of our visit is getting comparatively low. This is not to be wondered at, for Mr. Blow disposes of upward of two hundred stocks annually, and no swarms have yet appeared by which to replenish them. In reply to an inquiry, we learn that, after testing all varieties of bees, hybrids (that is, English bees crossed with either Italians or Carniolans) are better than any pure breeds, the latter cross being much preferable. Mr. Blow devotes a considerable amount of attention to queen-raising. We were not surprised to hear that he finds English-raised queens much better than imported ones, as naturally the former are more capable of withstanding the changes of our climate. Apart from this, he has found it necessary to give up importing queens, because foreign ones can no longer be depended upon. The increased demand of late years has made the raisers unscrupulous, who either send old queens or unfertilized young ones. Mr. Blow's apiary of English bees is a few miles distant.*

DRONE-CELLS FOR QUEEN-CUPS.

AN OBJECTION TO THEIR USE; AN INGENIOUS WAY OF EXTRACTING THE ROYAL JELLY FROM CELL-CUPS; POSSIBILITIES OF PRODUCING LARGER QUEENS.

Mr. Root:—Page 635 of your August 15th number contains an article, "Queen-cells from Drone Comb," indorsing the Alley plan for grafting cells to hatch queens. Having experimented extensively in the different methods recommended for queen-rearing, this disclaimer asserts that, in his opinion, no method yet contrived can equal the Doolittle cup-cell in producing large valuable queens. Apiarists are aware that worker-cells average $\frac{6}{32}$ of an inch in diameter, while drone-cells are $\frac{7}{32}$ flush; also that all drones matured in worker-cells are much smaller than those hatched in drone-cells. It is fair to assume that a queen reared in a drone-cell would invariably be much smaller than if reared in a queen-cell, the measurements of which are generally $\frac{8}{32}$ or $\frac{9}{32}$ of an inch in diameter, and round, therefore longer than a hexagon of the same diameter. It is true, also, that the smaller cells always produce the small queens.

Taking into account this difference in the size of cells, I was induced to experiment with a larger cell, of which the Doolittle cups afforded the only means of enlarging (satisfactory to the bees), to produce a superior queen bee that would not pass through Dr. C. C. Miller's zinc excluder, even in virgin purity. It looks reasonable to suppose that an increase in size would add value to the bee, in the enlarged capacity for eggs, and therefore a prolonged usefulness, as doubtless all germs of eggs are of equal size in a small or large queen. Following up the experiment, cells were used $\frac{10}{32}$ of an inch, from which were hatched very superior bees as to size, exceeding the average of natural-swarming production; and then the poetry of motion of her majesty on the combs at work pleases the eye of the connoisseur.

It is unnecessary to place the cups in the hive to be notched by the bees before introducing the jelly and larva. By the use of a glass instrument called a dropper, costing a dime, the jelly can be placed in the bottom of the cups as fast as one can pick up tacks. The bar holding the cup can be placed on the knee of the operator, while before his face, at an angle of about 25 degrees, is placed the frame from the hive containing brood to be transferred. Having cut away the quill one inch from the point, half the diameter, with it break down the lower wall of cell containing the larva wanted. This enables you to incline the quill and scoop out the larva without danger of injury.

By this management the larva is transferred without trouble and without any material injury to the comb, which is then placed back in the hive without commotion among the bees. It is doubtless a fact that improvement can be obtained in this line of work, which will enhance the value of queens. In improving my bees, as pure strains as possible are obtained from various sources, and the difference in the size of the queens obtained demands improvement in the method of breeding. Just before the cups are converted into cells, and capped, those having the least jelly should be removed, and the jelly used to start other cells.

HOW TO PRESERVE ROYAL JELLY FOR FUTURE USE.

If you are not ready to do so at the time, suck out the jelly with the dropper, and deposit it in a wax cup formed the same as cell-cups are, $\frac{3}{4}$ inch in diameter, and $\frac{1}{2}$ to $\frac{3}{4}$ inch deep. Cover by using a small piece of tin heated. Shave off the top of the cup, and this will cause a thin film of wax to be spread over. Press down on the cup, and two or three days may elapse, when the jelly can be used if kept from the air. In dipping the cells, use slightly salted water to dip the stick in before dipping into the wax. It is grateful to the bees.

Des Moines, Ia., Oct. 5. JAMES CORMAL.

[Our correspondent's objection to drone-cells for queen-cups, as recently suggested by Mr. J. D. Fooshe, does not seem to be sustained by the facts. Mr. Fooshe is quite an extensive queen-breeder in the South, and rears for us the larger part of the queens that come from the South. We have carefully examined the queens that have come from these drone-cell cups, and can assure our correspondent that they are not one whit smaller than and in no respect inferior to queens reared by other methods. It should be remembered that the drone-cells themselves form just a mere starter for the bottom of the cell; and, if we understand Mr. Fooshe, the bees soon enlarge it, making it into good-sized queen-cells.

Our friend Mr. Cormal has struck upon a very ingenious way of extracting royal jelly from the cell-cups. We never before thought of the dropper (or, as it is often called, "pipette") for this purpose; but we feel certain that it would do the work far more satisfactorily and expeditiously than any other method. They can be obtained at drugstores, usually, at from 10 to 15 cts., and we suggest the wisdom of Southern breeders—particularly Mr. Fooshe and Mrs. Atchley—testing the pipette immediately, and reporting on the same.]

WAXING QUEEN-CAGES.

PREPARING THEM FOR SHIPMENT, ETC.

When queens are reared by the hundreds and even thousands, the breeder must make every move count, and even then he sometimes has more work than he knows how to get through with. I have, from necessity, picked up several

*Mr. Blow makes the following acknowledgments to different parties who assisted him in getting together the above fine lot of engravings: To Percy Lund & Co., proprietors of the "Practical Photographer," for two photo blocks; to Messrs. Newton & Co., Fleet St., London, for permission to make blocks from their fine series of photos on "Bees and Bee Culture," for the use of technical classes. The portrait of Mr. Blow himself is from a negative by Maull & Fox, of Picadilly, London.

little time-saving devices, and will try to explain some of them.

It is an established fact now, that the feed-hole in a queen-cage must be waxed; and to do this rapidly I fill the oven of the cook-stove (that is, cover the bottom with one layer of cages), having the feed ends all in one direction (*from* you as you take the cages out). Get the cages as hot as you can handle them, and have some hot wax in a basin or tin pan on the stove before you. Now take a seat directly in front of the oven, and take a cage out with your left hand. Dip a teaspoonful of wax with your right, and hold the cage at an angle of 30 or 40 degrees, feed end down, over the wax-pan, and top (or open) part of cage turned slightly toward you; pour in the wax; turn the top of the cage quickly *from* you; lower the upper end slightly, and dump the wax out quickly on the side from you, and drop the cage on the floor (have a paper to catch the wax that drips out, or your wife may dump you and the wax and cages all outdoors). With a little practice you can wax them very rapidly, and very little of the wax will be in the queen's "living-rooms" or on the outside of the cages.

By having the cages hot, the wax penetrates into the wood, and is not so unsightly as when it is put on to cold wood.

Now you have your cages waxed, we will put in the candy and get ready to catch the queens. Have your candy made up two or three days before you want to use it, and just stiff enough so that it will not run or look watery on the outside. Get as many cages as you want to use at once, and pick the cage up in your left hand and put the candy in with your right; smooth it off with your thumb, so the hole is just full, and lay aside, etc. Now cut as many pieces of foundation as you have cages, and, if convenient, lay them out on the top of the reservoir on the stove (or anywhere that they will get soft, but not too soft to handle). Put the wax on; press it quickly all around with your thumb, and lay aside. Now get your wire-cloth covers (as many as you have cages) and put them on, leaving them drawn back far enough at one end to admit a queen easily; fasten the wire on by putting a ¾-inch rubber band around the cage. As you put the queens in, slip the wire over the cage, and the rubber band will hold it. Continue until you have the cages all full; then take them to the house (or wherever you have a workbench) and drive four ⅜-inch flat-head wire nails, one in the upper left-hand corner, and another a little to the right of the middle of the upper edge; another in the lower right-hand corner, and another a little to the left of the middle of the lower edge. I use a magnet hammer, as it picks up the nails easier than one can do it by hand. As you nail on the covers, slip off the bands and save them for another time. Get all the wires on, then pile up as many as each customer has ordered (say half a dozen); tack a strip of strong pasteboard along the ends, to hold them together, as it saves putting on extra addresses and cards (or thin boards); put a card on the top one, and address. If the weather is hot, slip a piece of thin wood between the cages as you pile them up, to admit more air.

I recently went into the apiary with eight cages, and in 22 minutes they were nailed up, addressed, and stamped. I put in from 8 to 25 bees, according to distance and size of cage.

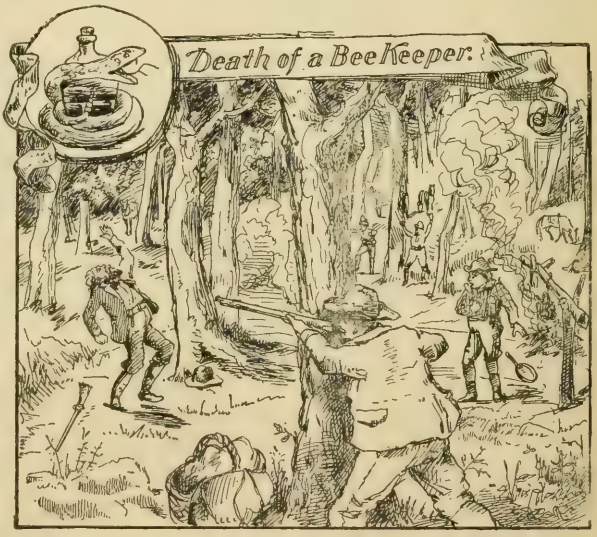
Swedona, Ill., Oct. 10. S. F. Trego.

[Friend T.'s suggestions are good; but if he will use *paraffine* instead of wax, and apply the same while hot, with a small sash-brush, such as painters use, he will do the work more rapidly still. Paraffine melts at a lower temperature, and soaks better into the grain of the wood. We have tried wax, but the other, in our estimation, is far better.]

RAMBLE 95.

THE MURDER OF A BEE-KEEPER, AS TOLD BY RAMBLER; A HONEY-EXTRACTOR THAT EXTRACTS BOTH SIDES AT ONCE.

The pigs that sought to put bangs on our hair aroused us, as we desired, at a very early hour; and long before sunrise four hunters with their guns, and mounted on horses, disappeared in the forest. It was the intention to hunt both small and large game. Messrs. Ferguson and Wilder carried Winchester rifles, while Mr. Squires, the man with big green goggles, and the Rambler, carried shotguns. Mr. Ferguson took the lead, and our horses had some difficulty in surmounting the steep and ragged hillsides. However, we kept together; and, while clambering down the side of a canyon, Mr. F. suddenly leaped from his horse, threw his gun to his shoulder, and shouted, "Here she goes!" and fired. It was quickly followed by another shot. Friend Wilder had also dismounted, and his rifle awoke the echoes of the forest. We that were in the rear had our minds on deer, and expected, when the firing commenced, to see a noble buck, with antlers broad, plunging in his death-throes through the forest; but, no—the game was nothing more nor less than a mountain sheep. With a bound or two it ceased its earthly career, and in an incredibly short time it was duly dressed and hung up in a tree against the time we should come back. Our next game was a few gray squirrels.

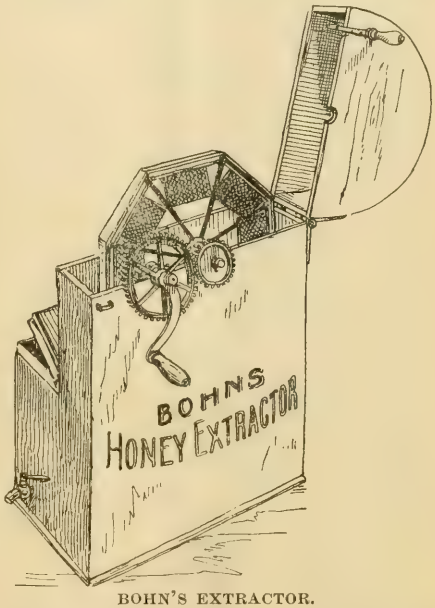


About eight o'clock we entered a beautiful park under the lofty pine-trees, and, picketing our horses here, we separated in various direc-

tions, with an understanding to meet at the rendezvous at three o'clock. The Rambler hunted so fast, and secured so little game, that he arrived at the rendezvous at 11 o'clock. That bed of pine needles at the foot of a tall pine-tree, and that delightful shade, and that saddle, so nice for a pillow, were all so inviting that I threw myself down at full length, and, such a refreshing nap as was enjoyed! When I awoke I found Mr. Squires frying bacon over a little fire a few rods away, and we had our dinner. We were just discussing about what we should do about waiting for the rest of our company, when Mr. Ferguson tramped into camp. His game was a gray squirrel. The deer that he went after did not materialize; but he had some very important news for us, and said that he came by the ranch of Fred Heap, about a mile distant, and learned that Gustav Bohn, a bee-keeper, had been killed, shot by Charley Button. Mr. Squires and myself were immediately interested, and, leaving a written notice to our absent hunter where to find us, we saddled our horses and went over to the Heap ranch, and arrived at about the same time the coroner did, and all three of us were immediately empanneled on the jury. Eight jurymen answered for the purpose, and we were conducted to the barn where the remains of Gustav Bohn lay upon a pile of straw, rolled in a blanket.

The uncovering of the body revealed to us a bloody spectacle. The bullet that had ended Mr. Bohn's earthly career had passed through the fleshy portion of the forearm, entering the left breast, and, passing diagonally through the body, came out near the right armpit. Besides this wound and its attendant blood there was a deep gash under the right eye, and the frontal bone appeared to be broken. The story of the killing is, briefly, as follows:

Early one Sunday morning in August four men and a boy met in a camp known as Deep Creek. A man named Clark had a cabin there; and, though he had no license to sell whisky, he had brought in for that purpose fifteen gallons. The four men and the boy set out to have a little Sunday picnic, as they termed it, and were going a few miles further to Fish Camp to hold it. Previously to starting, the treating process was indulged in, and the party began to feel remarkably well. There was, furthermore, a quart and a pint bottle taken along for future use. The principals in the tragedy, Mr. Bohn and Mr. Button, were strangers to each other, having met here for the first time. From the first their conversation took a chafing turn, and continued to increase in acidity as the party proceeded, and as they from time to time stopped to partake of the contents of the pint bottle. The party were all mounted, and Mr. Bohn had the quart of whisky in his possession. On the way to Fish Camp, Mr. Bohn fell from his horse, being partly dismounted by a lead horse. Arriving in camp, the horses were unsaddled and picketed. The lad, who had not drank any of the whisky, and who was the only sober one in the party, was directed to build a fire; and, while gathering the wood, he saw Mr. Bohn lie down with his head on a rock. Button and Bohn continued to bandy profane and angry words, and Bohn, having lost his quart bottle of whisky, accused Button of stealing it. This angered Button, so that he shouted to Bohn to stop his talk or he would smash him. This only angered Bohn the more, and the volley of words continued; and, besides, Mr. Bohn laid his hand on the hilt of a dirk-knife which he carried in a sheath in his belt. Button, suiting his action to his words, kicked (or, rather, stamped) Bohn in the face with his heavy nail-clad shoe, making the severe wound before mentioned. Bohn immediately staggered to his feet with dirk in hand, and with blood streaming down his face; but Mr. Heap snatched the knife away from him, and threw it into the bushes. Mr. Bohn then grasped his gun, which was leaning against a large pine-tree, and, raising it, snapped it at Button. There was no cartridge in the chamber; and as he moved the lever to throw a cartridge into place, Button leveled his rifle. The men shouted to Bohn to put down his gun, but he drew it to his eye; but before he pressed the trigger, Button fired. Bohn dropped his rifle, threw up his hands, stepped back three steps, and fell upon his back a dead man. This unlooked-for event had the effect of sobering the party somewhat, for they were in a state of deep intoxication. Not one of them had the courage to stay with the body in that lonely camp until the coroner could be summoned; and the ghastly operation was performed of lashing the dead body to the saddle that had brought in a live man, and he was thus carried to the residence of Fred Heap, where we saw his remains.



BOHN'S EXTRACTOR.

The jury of eight rendered two verdicts. One said that Mr. Bohn came to his death by a gunshot wound at the hands of Charles Button. The other four, evidently taking a little different view, desired to exonerate Button by putting in the plea of self-defense. The court afterward, in the preliminary examination, held that Button was blamable to such a degree that he was put in jail without bail, and is now awaiting trial upon the charge of murder.

After the coroner's jury arose, the body was rolled in blankets again, and taken to San Bernardino for interment. The little log cabin in which we held our deliberations was perched upon one of the most picturesque points upon the top of the mountain. All of the valley below, with its towns, was before us, while fully 60 miles away we could see the haze of the Pacific Ocean, and the little mountain projecting through it from Catilina Island.

Gustav Bohn was a German, aged 35, a stout, medium-sized man, with dark complexion, black hair, and full beard. He had been in this country 17 years, and for a few years past has

been quite successful in the bee business. His apiary, located at the entrance of City Creek Canyon, contains 500 colonies. Connected with the apiary is a fruit-farm of 15 acres, and on the mountain he had another ranch with 15 horses upon it. All together his property inventoried $7000, all earned within a few years.

The general verdict of friends was that Mr. Bohn was a very industrious and exemplary man, and had a host of friends in San Bernardino. He was seldom found under the influence of liquor, and one person said that this was only the second time he had been known to be drunk. Mr. Bohn led the life of a bach, like many other California bee-keepers; and while studying the habits of the bees and their manipulation his mind was busy with inventions to lessen labor, and he had constructed an extractor for throwing the honey from the combs, both sides at once. This principle of whirling the comb edgewise has been tried before; but Mr. Bohn placed his in a wheel, much like a wagon-wheel. Seven combs would fit around the periphery. The wheel was so constructed that 14 combs could be inserted at once. It was provided with heavy gearing, and the operation was so simple and easy that the eleven-year-old boy Claud Henderson extracted with it 12 tons of honey during the past season.

The Rambler parted with the pleasant friends in Little Bear Valley, and returned to Redlands through City Creek Canyon, while friend Wilder returned by Devil's Canyon. My ride was nearly 30 miles that day. The toll-road through the canyon is a most tortuous route, the grade having to take advantage of many spurs of the mountain that led a long distance around them. At the mouth of City Creek Canyon I called at the apiary of Mr. Bohn; but the gentleman in charge, Mr. Bledsoe, said that the extractor before mentioned had been taken to pieces, and the honey-house had also been nailed up for the present, or until the property was disposed of. It is supposed that a patent has been applied for upon the extractor. The reader can get a general idea of how it works from the diagram presented on the preceding page.

A lope of nine miles across the valley landed me safely in Redlands, with no further mishaps than a sunburnt face and a very much peeled nose, the result of the hot sun on the mountain grade. Red noses are sometimes caused by whisky; but whisky does not affect the nose of the RAMBLER.

THOSE OLD BEE-BOOKS.

ANOTHER PEEP AT THE "GOOD OLD TIMES."

The next book on the docket is a small one of 47 pages, equal to 6 pages of GLEANINGS. It is entitled "Collateral Bee-boxes; or, a new, easy, and advantageous Method of managing Bees; in which part of the Honey is taken away in an easy and pleasant Manner, without destroying or disturbing the Bees." It was written by Stephen White, M.A., Rector of Holton, Suffolk, and printed in London in 1764. This was at a time when the relations between England and America were greatly "strained," and the war-clouds were becoming black. There is something about Mr. White that makes one like him; and the reason which he assigns for following bee-keeping ought to commend itself to all. He fully believes, with Paul, that a man who preaches the gospel has a right to live by it; but his wife's dolorous drumming on the bottom of the meal-barrel reminded him painfully that Elijah was not filling it miraculously as he did that of the poor widow. The following beautiful passage was born in poverty, and would never have seen the light to bless the world if Mr. White had had the princely income of some of the English bishops:

"The smallness of my cure [pastoral charge] has afforded me more leisure hours than usually fall to the share of a great part of my brethren. Many of these hours, during almost the whole space of a now declining life, have been spent in my bee-garden, with as much innocence, I hope, and a great deal more to my taste and entertainment, than if they had been spent with a gun and pointer [dog] in the fields, or in my parlor with a pack of cards. These fashionable amusements (especially the latter) can afford but little entertainment to a contemplative mind; but the surveying of the works of nature (particularly the instincts and polity of many living creatures and the wonderful methods they make use of for their sustenance and safety) will give a real and high delight to a rational soul; and as it is next to impossible to turn our thoughts to the observation of these creatures without lifting them up at the same time in adoration of Him who formed them, this will, in a manner, sanctify our pleasures, and turn even our diversions into a sacrifice to our divine Maker."

Just what Mr. White thinks of implements for preventing swarming may be seen from what he says of the Gedde hive. It seems that this Mr. Gedde drew up a formal approbation of his plans, in the name of the Royal Society, but really without its authority. Mr. Gedde proposed "to free the owners from the great charge and trouble that attend the swarming of bees." Mr. White adds, "That means, in other words, to deprive the poor bee-master of all the profit and one of the highest pleasures he can expect from bees." The trouble was, one man looked at it from a business standpoint, and the other from that of fun. I rather suspect that most bee-men would side with Mr. Gedde. The latter mentions several non-swarmers, but none were as good as his. Mr. White asks, further, with some warmth, "Why should these gentlemen deprive me of a pleasure I so ardently look and long for every spring, and which I am more delighted with than all the other pleasures of the month of May?" Such men ought to be allowed to have swarms in peace; but still his question reminds me of one which was put to me by a German during the crusade in 1874: "Mr. R., would you deprive me, a poor man, of my beer?" I replied, "I would deprive you of that which *makes* you poor and sick, and is fast making a wreck of you." Mr. White intimates that, if a man really wants a non-swarmer, he need not beat his brains out in devising one. Just get straw enough to make a hive that will hold two bushels, and—*there you are!* It may be of some comfort to friend Langdon to know that inventors of non-swarmers have not always been successful. Mr. White deposeth: "In spight of all our swarm-preventers, behold I see a cloud of bees overshadowing my garden, ... exulting in the presence of their sovereign." If Mr. White could have looked forward 129 years he would have seen bee-men still discussing the matter. I dwell on this matter so much *in extenso* because the discussion is still before the house.

The Mr. Gedde referred to above was the inventor of what is called the "octagonal" hive, putting it before the public in 1675—about a century before Mr. White's time.

The wanton destruction of bees arouses Mr. White's deepest abhorrence; and although it is not now customary to brimstone them, the following words will certainly tend to inspire all who read them with more mercy for the lower animals:

"No true lover of bees, I am persuaded, ever

lighted the fatal match that was to destroy his little innocents with livid flames, and a smoke that strikes them dead with its intolerable stench, without much concern and uneasiness. Besides, we are not to imagine that the bountiful Creator, who has indeed given us all things richly to enjoy, has likewise given us such an absolute right of life and death over all of his creatures that we may kill them wantonly at and for our pleasure. I know no right we have over the life of the meanest insect or vilest worm that creeps upon the earth, unless the killing of it be in some way or other useful and beneficial to us. We may take away the lives of our cattle in order to support our own; but it would be a criminal piece of cruelty as well as folly to butcher an innocent sheep merely for its fleece, which we might take again and again without hurting it. . . . Avarice often mistakes its own interest. It can never be made to understand that strange proverb, 'the half is more than the whole.' It is more to our advantage to spare the lives of our bees, and be content with a part of their stores, than to kill and take possession."

The above was written at a time when the death-penalty in England hung over a person for stealing a shilling. Few things are funnier than for a press-gang to steal a man for the navy and then hang his "widow" for petit larceny. This government can be justly criticised "along this line" too.

Mr. White disapproves entirely of the old straw hives, and uses a box 9⅝ in. deep, long, and broad. That would be about equal to a peck and a half. Each hive has a long narrow slit near the top, so that, when two hives are placed together, the bees can go from one to the other as they need room. If they do not need extra room, a board is shoved between the hives. Considerable glass is used, so that the hive has nearly all the advantages of an observatory hive. But Mr. White did not care so much to see the bees at work as he did to know when the moths were beginning their ravages. He speaks of these latter as more to be feared than all other enemies combined.

Our author is rather severe toward the old writers who have suggested that the crop of honey is limited only by the number of bees to gather it. He says that, in his own town, a large one, only seven colonies were kept in his hives and two in other kinds—nine in all. He says:

"I have often thought it very surprising that neither the authors who treat of bees nor the keepers of them ever imagine that any place can be overstocked, or that any one's bees fare either better or worse for the larger or smaller stock that is kept in his neighborhood. They think, it seems, that every flower they see is a never-failing cruse of honey. Let me here acknowledge the bounty of our Creator, and with due thankfulness and admiration confess, that, in some sense, it is so; for when a bee, with its little lambent trunk, has cleared a flower of all its *present store*, another comes, 'tis likely, in less than a minute, and finds *something;* for the delicious juice is continually sweating through the pores of the plant. But it is certain, for all this, that, the more of these guests visit a flower, the worse must each of them fare. They will have the less to carry home, or, which is all one, they must go further and spend more of their precious time before they can make up their burden."

The perusal of this little book has pleased me very much, and I am glad to be able to put some of Mr. White's favorite ideas before a larger audience than he did; for just so far he lives again through us. W. P. ROOT.

Medina, Oct. 21.

CALIFORNIA.

AN EASTERN BEE-KEEPER'S EXPERIENCE IN TRANSFERRING; REVERSING COMBS; SECTIONAL BROOD-FRAMES; MOVING BEES.

After using the Langstroth, Quinby, Gallup, American, and Heddon frames for several years in the East, in starting an apiary in this State it was concluded to begin at the lowest notch and adopt altogether another form. Bees, as procured, therefore, had to be transferred from the old into new frames and hives, in consequence of which it was just as well and cheaper to purchase colonies in nail-kegs and soap-boxes as in the best of hives.

If the subject to be first dealt with is a box, it is the best plan to drum upon it, and, with smoke, drive as many of the bees as possible from the combs into a convenient box from which they may be easily shaken down before the new hive when wanted. If it is a movable-comb hive, the queen should be found and caged, and the cage laid among the bees; then remove two or three combs containing brood, and transfer, and hang in the new hive which is to take the place of the old one on the old stand, and then the remainder of the combs are taken out and the bees brushed down before, and allowed to run in the new entrance, accompanied by the queen.

It has become little short of a habit, in cutting the combs loose from the old frames or box, to take them into a warm room to avoid cracking the combs, and lay a heated knife down flat, so as to make a square cut through the top of the comb close to the wood to which it was attached. Then the new brood-frames are prepared with bottom-bars a full inch (or the same width of the other parts of the frame) in width, so when the frame is set up on the bottom-bar, and the wide, squarely cut honey edge of a comb is placed on it, the frame and comb will usually stand alone while the twine is being tied around them. Thus the comb is inverted as to its former position, and it is contrived to have all or nearly of the combs crowd upward against the top-bars; and as this empty edge is clean and workable it is very quickly attached to them; when, otherwise, if the honey or brood edge were above, the honey and brood would need to be cleared away, and some comb removed before a firm attachment could be made, in which case the upper edge of honey will lean heavily out against the strings; or, if the honey edge is narrow, its weight will cause the thin comb below to bow outward and finally break, allowing the honey to fall down. At the same time, the bees assist to make the bad matter worse by cutting the wax out where it strikes the strings, in some cases cutting the combs entirely through.

In using narrow bottom-bars a difficulty is, to make the edges of narrow combs stay on them; and as the bottom slides off on one side on to the bottom of the hive, the upper edge leans outward against the strings on the other, and leaves a wide space from the top of the comb to the top-bar of the frame, when the comb will have ample time to settle, bend, or be gnawed into crookedness before new comb can be built to form the attachment to the top-bar.

It is probable that these difficulties are what cause the use of sticks instead of strings, or the adoption of the Heddon driving method and melting up all the combs and giving sheets of foundation. Strings are easier to get and use, and the bees can usually remove them from the frames.

As the combs rest closely against the top-bars, it requires only two or three hours before

the bees will fasten them with borrowed wax, and at the same time they begin to pick and pull to get the strings loose to drag them out of the hive. This causes the strings to lengthen and diminish until they are gnawed away. Instead of the comb being cut out, the bees take the strings to be the aggressors, and save the combs. A prevalent fault with transferring is the expectancy that the bees are to build new comb to fill up spaces and make the attachment to the top-bars. Bees can not build combs from the word go, but must first consume honey, and wait for the secretion of wax.

There should be nearly as much of the comb in contact with the top-bar as the greatest width of the comb. If the comb is in narrow strips they should be stood up endwise so as to reach both the top and bottom bars; and where one edge contains honey it should be made flat, and the honey placed in a leaning position against an end-bar. Nor should a part of a comb be cut away because it contains honey.

A rather heavy article of grocers' cotton twine is just right. When the strings are too light it will be removed by the bees too soon; and if too heavy it will cause the mutilation of the combs, and the combs are never full of ridges and hollows as when sticks and wires are used.

It is a pleasure to transfer by the "driving" plan; but it is not a good practice during a dearth of honey, when the colonies are not strong in bees, or when the combs contain brood, and it is desirable to save labor for the bees. Then there are also just as perfect combs in the old hives as could be produced from foundation. Last fall I took a colony out from between the studding of a schoolhouse where there were only three combs, but each was 15 x40 inches in size, clear and straight. There is no reason why transferred combs should not be clear and straight if the implements, frames, and combs are prepared to the best advantage —good enough, at least, for the first season's use, after which they may be elevated to the upper stories, and foundation-drawn combs substituted in the brood-nest.

Up to May 15th the bees were kept in the valley, where they gathered honey from willows, eucalyptus, oranges, and pepper, at which time all but 60 of the weaker colonies and the latest hived swarms remained, while the rest of the apiary was taken into the mountains. On returning, in the latter part of July, the hives in the valley were found to contain 50 to 80 lbs. each of dark, unsalable honey, and it was thought, "What a fine winter supply!" But it was about the 8th of August when streams of honey were noticed creeping out of the entrances, and running off down the hill, and the new occupation was begun of wheeling hives up alongside and dumping the contents, combs, frames, brood, honey, bees, and all, into the solar wax-extractor. This was kept up until about three-fourths of all the swarms whose combs had not been reversed, and which had not been built down to the bottom-bars, were destroyed. Shading the hives seemed to be of little use.

Heretofore it has been my practice, as soon as the combs were built out, usually at the time of the first extracting of honey, to put the frame in a vise and saw the projecting arms off the top-bar, to make it into a bottom-bar; then remove the old bottom-bar and nail a new top-bar on in its stead, thus having the combs securely attached to the bottom-bar before inversion. But this season, having more work than usual, the valley apiary was neglected, with the foregoing result.

When I came to this State, and visited apiaries a year ago, I was shocked at the way the bees were literally robbed of their winter stores by their merciless owners; but after this experience I have changed my mind, as it is better to lose bees by starvation than by the melting down of the combs.

A few weeks ago, in Ventura Co. I was at an apiary of 140 colonies which yielded 18 tons of honey, and the apiarist said that 40 colonies on wired combs were destroyed by the combs melting down last year, and 60 more starved last spring. These 100 colonies should have produced 25,000 lbs. could they have been saved, which, figuring from his actual yield from the remainder of the apiary, would have given him $1.00 per comb to pay for the trouble of inverting and securing the fastenings to the bottom-bars.

How to leave in the combs sufficient winter stores and not have the combs melt down, seems to be almost as vexatious a problem in California as the wintering problem is in Iowa. When the combs contain but little honey, and they fall, it results only in crooked combs; but with considerable honey it smothers the bees, queen, and brood, and all is a total loss. To guard against this, many apiaries use combs 9x10, 12x12, with dividing-bar through the center, and 8x12 with and without wire; and this adoption of small and irregular-sized frames is largely the cause of the non-production of comb honey. Small frames are also advantageous in moving bees into the rocky canyons. In Iowa, when bees are to be moved it is usually cool enough to make the combs strong, and also prevent the bees from raising the air to a melting temperature; but here it continues warm all the time, so that a small disturbance makes the warmth excessive. In one instance last June, in moving 100 colonies from the valley to the mountains, where the whole size of the brood-nest was covered with wire cloth, less than ten colonies arrived at their destination alive.

As a result of keeping the bees in the valley, many which were only nucleus colonies of three and four combs on Feb. 1st built combs from half-inch starters so rapidly as to fill two upper stories besides the brood-nest by the 15th of May. Such hives of new combs, partly filled with honey, were almost immovable, except over the smoothest roads; where, if they had been able to stand a rough twenty-mile haul, from 80 to 100 lbs. more honey per colony might easily have been secured. Had the colonies been taken to the sage-fields in March, they would not have built the new combs until the opening of the honey harvest in May.

When an apiary has been established long enough to have surplus combs already built, it may be advised to keep the bees in the sage region permanently; but even in that case, when sage yields honey only now and then a year, and as the valleys yield honey every year, it seems to be highly advantageous to have an apiary readily movable; and instead of using a smaller frame it would seem to be a better plan to put in upright bars in the center and a cross-bar midway between the top and bottom bars, dividing a 9x13-inch frame into four, and a 9x17-inch frame into six divisions. This method is quicker than wiring, and absolutely safe from sagging of combs and warping of foundation, and at the same time adapted to a lightning method of putting foundation in brood-frame divisions with the Daisy fastener.

Probably the best plan of fastening frames for moving is with the notched sticks, or with strips of tin an inch wide having small leaves cut out and bent downward in the spaces. A spacer is needed on each end of the frames on the top, and one under the center of the bottom-

bars. The bent wire described in Langstroth Revised is a good implement also.

These matters may seem to be of little moment; but it is found that there is scarcely an hour in the morning or evening best suited for the loading of the hives on the wagon, to say nothing about fastening of bottoms and covers, frame-fastenings and entrance-stoppers. When we once get off on the rough roads, it is very comforting to be *sure* that no comb can break down, no colony smother or bees get loose. I may speak about ventilation and entrances in another communication. C. W. DAYTON.

Los Angeles, Cal., Oct. 10.

[If you use self-spacing frames you won't have to be bothered with spacing-sticks and the like. Say, you don't tell us what kind of a hive and frame you are now using in California, after having had experience in Iowa with Heddon, Langstroth, and other frames.]

NEW MEXICO.

AN ENGLISHMAN'S EXPERIENCE.

Mr. Root:—Will you permit me to relate my experience in bee culture? I should be extremely obliged if I could obtain information upon one or two points that have arisen in connection with it. To begin, I must say that, previously to coming to the States, I had no practical acquaintance with the methods that are in vogue here, and I do not remember having seen any other kind of hive in operation than the old-fashioned one pictured upon the cover of your journal, and I knew of no other way to obtain the honey than by destroying the bees; so you will see my knowledge was a long way behind the times. I had formed an opinion, from reading, that the Americans were much further advanced in apiculture than the English were, and that bee-keeping was far more general here than over the water. I have since found this to be true, although I have also learned that British apiculture is in a much further advanced stage than ever I suspected it to be.

Before I left London I had made up my mind that, if this country here was suitable for keeping bees, I would enter upon it as soon as practicable, despite my ignorance of the subject; and so in March last I purchased two colonies of Italian bees and commenced to get experience. I soon became intensely interested —fascinated, perhaps, would be the better word —in my new acquisition; although I was exceedingly timid at first, and every time a bee began to buzz I felt like bolting.

As soon as I saw that they were beginning to bring in honey I placed a super on one of the hives, and this was filled during the month of May.

The other hive I began to experiment upon by dividing it and forming two nuclei from it, but without having any queens. I was anxious for some time lest I had done wrong, and thrown away a lot of time. I watched them closely until they had reared queens for themselves, then I feared lest they were merely fertile workers; but they have proved to be excellent queens in every respect, and produce brood at a rapid rate. Of course, if I had known more of their habits I might have saved a good deal of unnecessary worry.

My next experiment was in driving a swarm, to prevent natural swarming; and in this, after consulting the A B C, GLEANINGS, etc., I succeeded in doing beyond my expectations, and have a capital colony from them. I was in doubt as to how I should manage if I had a natural swarm come off, and so my first efforts were to prevent them doing so, as we have no trees near here upon which they could alight, and I did not wish to run the risk of losing them; but one morning my son came in, saying that the bees were swarming. Fortunately they alighted on some old pieces of timber I had near by, and I quickly got a hive, stole a frame of brood from another colony, and had them quickly fixed up, and now they are doing well, and I am taking a nucleus from them in the course of a few days when I get a queen. I have divided and subdivided until I have eight colonies and one nucleus. I should like to ask if I have divided them too much or too quickly. I am without experience on the subject.

I had heard, and have read in the journals and periodicals, that alfalfa is an excellent honey-producing plant. I should like to ask if this is an opinion only, or is it a fact based upon the practical observation of competent persons. This district is an alfalfa country. It has been in bloom here since the middle of April; but, though I have watched, and my son has watched closely, we have failed to find any bees working upon it at any time; and when it has been in bloom within a few yards of the colonies, I have observed the bees to go in exactly the opposite direction, where there has been no alfalfa within a mile. The honey-flow began in the latter part of April, and continued during the month of May; and as soon as the mesquite-bushes ceased blooming, the flow stopped. The honey obtained was water-white, and of a most delicate and delicious flavor, while the comb also was very white indeed. During the months of June and July the bees in this neighborhood did practically nothing. In one hive they ate up nearly all their stores, but during this month (August) they have been exceedingly busy, and accumulated honey very fast; it is, however, brown in color, and strong in smell and taste, altogether unlike the honey obtained in May. I believe it is obtained from a species of wild sunflower which blooms profusely just now, and there is the same kind of smell with both honey and flower. I may say, that alfalfa has been in bloom the whole of the time from the middle of April until the time of writing, and upon inquiry among other bee-keepers my observation as to bees not working it is confirmed.

I purchased one queen during this season, and introduced her into a queenless colony. She began to lay drones in worker-brood comb, and continued for some time producing beautifully marked small drones. She then changed over to worker brood, and was going on very well; but before the hive was full a queen-cell was started and capped over; and as at that time I had lost a queen I concluded to take the queen from this hive (leave the one capped over to come on), and introduce her to the queenless colony. After a week or so I saw she had begun drones again; and during a period of more than six weeks she produced only drones in worker comb, so I determined to get rid of her at once. I should like to ask what the cause was of her producing the drones, when she was changed over, as already there was a large number of drones in the hive. The queen raised from her is doing excellently, and filling up the hive fast with working bees.

Eddy, New Mexico, Aug. 31. W. HUGGETT.

SHALLOW COMBS.

THEIR ADVANTAGES.

Mr. Root:—On page 537, July 1, 1889, Mr. Heddon says: "If I could get the capacity desired, as cheaply, and still keep the standard length and width, I would not have my combs

over four inches deep. The fact is, the shallower the better." If he is willing to tell why, and you are willing to give his answer in GLEANINGS, I should be glad to have it so.

JOHN S. CALLBREATH.

Rock Rift, N. Y., Oct. 3.

[We submitted the matter to Mr. Heddon, who kindly replies:]

Dear Gleanings:—In response to a solicitation from Bro. Callbreath, I will say that I am as greatly in favor of shallow combs as I was on the 10th day of June, 1889, when I penned the article found on page 537 of GLEANINGS for that year. When I first adopted the Langstroth hive, my brother bee-keepers were all about me expressing apprehensions of dire results from its extremely shallow combs. Time has proven the application, to this case, of the following appropriate adage:

Half of our troubles are half our inventions;
And often, from blessings conferred,
We've shrunk with wild apprehensions
Of evils that never occurred.

No doubt most of your readers are very well aware of the numerous advantages of shallow combs, but very many have been, and some are still, fearful of disadvantages arising from what they are pleased to call extreme shallowness. The work of T. F. Bingham, and those who adopted his hive, invented some thirty years ago, has utterly disproved the theory that combs can be so shallow as to injure the successful living and working of the bees. While the use of Mr. Bingham's hive was never widespread, and is now, perhaps, nearly abandoned, it was not because of the extreme shallowness of the combs, which were only 4¼ inches deep, but wholly for other reasons. He used 8 frames, 22 inches long; and his method of combining these combs, or, I might say, his hive construction, didn't come into general favor. I used one of his hives eight years, and I wintered a colony in it outdoors eight winters; and while several were very severe, and many colonies in my apiary died, the one in this small brood-chamber, with its extremely shallow combs, never showed even any sign of disease, except once, when it died with the winter malady, the same as others. My experience and observation warrant a positive belief, something akin to absolute knowledge, that extremely shallow combs are not excelled by any other, for safely wintering the bees. We are all aware of the fact that shallow frames are more easily handled, better adapted to the storage of surplus honey, less liable to brace and burr combs, and, I believe, better adapted to early and extensive brood-rearing. While they have other advantages, I will not take the space required to enumerate them, as most of your readers are aware of what they are.

I know, Mr. Editor, you prefer short articles; and since entering the profession I more fully appreciate the reason why; but if the above doesn't seem to you or your readers to cover the ground completely enough, I shall be pleased to go farther. JAMES HEDDON.

Dowagiac, Mich., Oct. 16.

[Mr. Heddon has told us of the advantages of shallow combs, but has not told us exactly why he would have them *shallower* than his regular combs. We should be glad to give more space to this question, if it is desired.]

THE NORTH AMERICAN BEE-KEEPERS' CONVENTION AT CHICAGO.

A BRIEF REPORT OF IT BY E. R. ROOT.

As I sit before my desk this morning I feel my utter incompetency to do justice on paper to that mammoth convention that has now gone into history. In our last issue I alluded editorially in various places to the "big convention," little dreaming, however, that the little word "big" would so fitly describe it. I had expected a large attendance, because the Columbian Fair would draw bee-keepers from all over this great land. But if any one had asked me how large the convention would be numerically, I should have said, "Not much to exceed 125." But the records show that there was an enrollment of 225. At the former meetings at which I have been present, 100 has been considered a large attendance; but what may we think of the number at Chicago? It was the most representative gathering the association has ever had or perhaps ever will have. At one of the sessions a show of hands was called for from each State and Province. The following table shows the number of representatives from each as they were called off:

California, 2.	Ontario, 14.
Colorado, 3.	Quebec, 1.
Illinois, 43.	Maryland, 2.
Iowa, 23.	Michigan, 20.
Indiana, 6.	New Hampshire, 1.
Kansas, 1.	Minnesota, 5.
Kentucky, 2.	Missouri, 4.
Nebraska, 2.	Vermont, 4.
New York, 15.	Texas, 3.
Ohio, 30.	District of Columbia, 5.
Pennsylvania, 3.	Australia, 1.
Wisconsin, 9.	Chicago, 8.

Our former conventions have been largely local; and the small attendance even then has been somewhat discouraging to an association having such a high-sounding name—a name that is supposd to take in the whole of the North American continent. As Dr. Miller says in Straws, "There never was a time when so many bee-keepers assembled at one place as at the convention in Chicago; and, we may add, there never was a time when so many *prominent* bee-keepers, who have been known by their writings or large crops, were present together," many of them coming great distances. As the table above shows, there were representatives, not only from far-distant States, but one from Australia, in the person of J. W. Pender—a delegate from the Hunter River Association—a society that occupies a position quite similar to that of the North American. Then we had an attendance of just those bee-keepers whose familiar faces we can not afford to miss—those who have the faculty of enlivening the proceedings and making what otherwise might be a dull and tedious meeting something lively and exhilarating.

The first thing on the program was an address of welcome by Mr. G. W. York. We do not usually publish in our convention reports the full text of an address; but as this is short, and happy in style, we give it entire.

ADDRESS OF WELCOME.

Mr. President, Ladies, and Gentlemen:—

It is with a feeling of sincere pleasure that I am permitted to welcome to our Western metropolis, and at present the Mecca of the world, the grandest association of bee keepers this continent has ever known. As a representative and resident of "Chicago the Peerless," I offer to you not only "the keys of the city," that shall open the gates to all its pleasures and wonders, but I also extend to you a most hearty and cordial welcome.

Many of those who are here before me have come from distant climes, and are now indeed in a "far country;" but, nevertheless, remember that you are still in your "blessed homeland," and that the same God reigns here as in the sunrise East, in sun-crowned Canada, in the sunset West, or in the sun-kissed Southland. I trust that, during your brief sojourn within our borders, you may all feel perfectly at home; and that, when your conventional labors are ended, your inclinations for sight-seeing be fully gratified, and you return once more to the

loved ones around your various hearthstones; and permit me to express the hope that you may carry with you memories that shall serve as an inspiration in future days to nobler and better living, both for time and for eternity.

I realize that it is no small thing to welcome to our city the representatives of so honored and ancient an industry as bee-keeping; for ever since bees and honey were found in the ribbed carcass of the lion in the time of Samson, until the present hour, honey and its production have been the delight and profit of the sage as well as the peasant; and to-day I know, from my own experience with men and women, that many of the very best people in all the world are devoted to the honorable pursuit of apiculture.

Bee-keepers of America, while the horologe of time is striking the eleventh hour of the century, I bid you welcome to Chicago—the eighth wonder of the world. Welcome, also, to the untold splendors and matchless magnificence of the beautiful "hite City," within whose doors is the most marvelous collection of the handiwork of mankind that earth ever beheld. Yes, welcome to all these, for *all things* are theirs who believe.

Welcome, then, ye bee-folks, welcome!
To our cities grand and free;
May thy meeting prove as "blessed"
As thy little busy bee.

Chicago, Ill., Oct. 10, 1093. GEORGE W. YORK.

Continued in nextoissue.

QUEENS TO IRELAND

FROM MEDINA.

Friend Root:—Some of your readers might like to hear about the arrival and reception of the queens forwarded by you to the Hibernian Apiary in far-off Ireland, so I shall proceed to furnish some particulars. On Saturday afternoon, July 1, I went to the postoffice, and, to my delight, I was handed the two cages, which, I need not tell you, we examined then and there. In both the queens were lively, and there were a few more dead bees in that marked No. 1 than in the other. The postmaster, who had received reiterated instructions from me as to their treatment on arrival, seemed considerably relieved to know that at last his responsibility was at an end.

After exhibiting them to a lady friend heavily stricken with bee-fever, I proceeded to our church-choir practice, where, after the exercise was over, the bees were duly admired, more particularly by our worthy parson himself.

No. 1 was placed on a comb of sealed brood in a hive long queenless, but regularly supplied with brood from another hive.

No. 2 was introduced under a drone-cage by a plan of my own, which consists in caging the queen of the hive till its inmates are personally aware of the fact, when she is removed, and the stranger is substituted under the same cage. The stranger is then left undisturbed till the bees have again clustered on the cage, when it is usually safe to liberate her. Of course, she must be watched; and if any symptoms of anger are shown she must be again confined till her reception is cordial.

On the following day I liberated them; but as hostilities ensued they were once more imprisoned till the next day, Monday, when they were kindly received.

No. 1, which I took to be of "Neighbor H.'s" strain, and which I destined as a drone-mother, has taken kindly to her duties, and several drones are now in the larval stage in a drone-comb placed for their reception in the brood-nest.

No. 2 is also busily at work, and I hope that, by heather time, which is usually in August, I shall have a goodly band of Italians eager for the spoil.

FOUL BROOD.

I wish to add a word on foul brood. This terrible disease has made fearful havoc among the bees in this neighborhood. I purchased a hive a short time since, transferred them that night, and on examining them by daylight I discovered to my horror that the combs which I had transferred were full of it. As you may imagine, after discovering the plague I lost no time in making preparations to fight it. Fortunately I had on hand Frank Cheshire's invaluable work on bees, and, as I had already posted myself on his foul-brood treatment, I soon had a sprayer at work, charged with a strong solution of carbolic acid. The carbolic fumes quickly drove out the bees. The queen, however, I secured and caged. The bees thus driven from their hive joined two other colonies, and were peaceably received. I was then left with the queen and the combs; the former I dispatched, and the latter were secured and ultimately melted down. I then had to watch the two colonies which the infected bees had entered. By occasionally spraying with a carbolic solution any suspicious spots, I effected a cure. This treatment, I am sure, is the best and most reliable. In all cases it is advisable to destroy the queen, as, in most cases, her ovaries are infected, and consequently every egg she lays contains the germs of the disease.

H. S. G. STEPHENSON.

Cor Castle, Inneshannon, Co. Cork, Ireland, July 12.

[We have tried this spraying of carbolic acid here at Medina, and it seemed to have no effect.]

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

WOODEN WAGON-WHEELS DURING A DROUTH; MORE ABOUT LOOSE WAGON-TIRES.

Friend Root:—Since reading yours in Sept. 15th GLEANINGS about "loose wagon-tires," I have thought I might help some one, if not yourself, by contributing my "mite." When I came to Texas, 26 years ago, I experienced the same trouble you speak of with loose wagon-tires. In fact, as we have longer drouths, and the sun shines hotter, the trouble is intensified—more especially so since nine out of ten farmers let their wagons stand out in the weather the year round. However, I soon learned that wheels made of our native bois d'arc (bow wood), when well seasoned, never shrink, but the tires keep tight till the wagon wears out. Nor is this all; for our black limy soil soon destroys oak or other timber, while it has no effect on bois d'arc. No one ever lives long enough to see a fence-post of this timber rot. I have known posts of it shipped 250 miles or more to be used. I now have had a wagon in constant use for six years; and although we have just passed through a severe drouth, the heat sometimes at 102° in the shade, the tires are as tight as the day I bought it; while all along the road may be seen oak wagons with a broken wheel from the tires coming off.

When I came here a bois d'arc wagon cost $150.00. The one I now have cost $85.00, all complete with top, box, bows, and sheet and spring seat. A good northern-made oak wagon costs here $75.

I use boiling linseed oil with good effect on my buggy and sulky wheels. The wheels should stay in the oil about one hour, and should be applied at least once a year. You can get bois d'arc wheels made here, or you

can have the timber shipped north and made up. A good deal is being shipped already.

I like GLEANINGS mostly for its home talks and useful hints in general, as I have but few bees now, and will never change the Simplicity hive for any other.

Honey crop is light here. I aim to raise honey only for my own use. J. G. FITZGERALD.

Brookstown, Tex., Oct. 9.

[We are glad to give place to the above letter, even though the principal point is, getting timber from a place as far away as Texas. While reading it the idea kept coming to my mind, that wagon-wheels made entirely of metal would never get loose in dry weather; and, in fact, I have seen wheels with tires five or six inches wide made in this way. I presume they would weigh something more than a wooden wheel; but is it not possible, at this stage and age of progress, to make a wheel entirely of steel as light as one made of wood? I feel quite certain that wide tires of some kind are soon to come into use generally; in fact, the great traveling public can well afford to pay the teamster a pretty good sum of money who will travel the roads with a wide-tired wagon; and the man or woman who rides a wheel could afford to give him still more; for you can follow a wide wagon-track for miles and miles, with scarcely a bumb or jar, compared to picking your way where only narrow tires are used.]

SCRAPING SECTIONS.

In our honey-house we have a stove, on the hearth of which I this year placed a board long enough to range four sections facing forward, and as wide as the hearth, to put the cleaned sections on till ready to place them in the shipping-case, which was on top of the stove, all ready for use. In front of the hearth I placed a bee-hive upper to serve as a table; at the right of this a tier of supers—six or eight on a low box, to raise them a little from the floor. On one side of the open a large old tin milk-pail was placed to catch the scrapings. On the other end of the hearth was a chisel to loosen frames with sections; a strong knife for prying; caseknife with straight edge to shove scrapings out of the way or off the board into an old pail; a jack-knife and razor for cleaning sections. I use the first mostly. Having every thing thus at hand I would seat myself on the remaining side of my table, upon which rests a planed board long enough to reach across the table from the old pail on one side, and on the other, close up against me, thus keeping most of the scrapings on the board till I push them to one side, or off with my caseknife into the pail. What does not go I shake or scrape off when I arise to put the clean sections into the shipping-case. Another year we may try Mr. Flansburg's "screen-bridge" or something similar.

Mr. Root, you did a nice thing when you got W. P. R. at those old bee-books. I am more especially pleased that I have been doing something of the same kind for a number of years, only I did not have the books to work at.

Tiffin, O., Aug. 24. R. MOORE.

VALUE OF THE DIVISION-BOARDS.

In May 1st GLEANINGS Dr. C. C. Miller, in Stray Straws, asks, "Are division-boards of real value?" etc. In reply I would say that they are for certain purposes, to-wit:

1. A small swarm, covering only two to four frames, hived on starters late in the season, will start to build comb in one end or corner of the hive, covering, may be, the corner of five to seven frames, and will, if left alone, start to draw those out simultaneously, slowly and to disadvantage; and should the honey-flow, and, in consequence, the building of comb, stop abruptly, there would be so many unfinished combs on hand. The proper use of a division-board will prevent this. Confine the swarm by means of it to a space they will comfortably, yet completely, fill, thereby concentrating the heat and their united labor, and you will get full sheets of comb as far as possible, instead of half-finished ones.

2. This applies equally to section honey. When, late in the season, your sections are, probably, not going to be finished, crowd the bees by the use of one to three division-boards inserted into the hive above, and watch results.

3. In wintering, too, I should prefer to have a division-board or two joining the sides of the hive, instead of an empty comb. This is the extent to which I find them useful and will stand up for. C. WINTER.

Piru City, Cal.

HOT-AIR ENGINES FOR PUMPING WATER.

We ran short of water this summer, and put in a 6-inch Ericsson hot-air pumping-engine, at an expense of $180. It pumps 225 gallons an hour, and burns two gallons of gasoline in 12 hours. If I had put it in earlier in the season I think it would have nearly paid for itself this season. EUGENE DAVIS.

Grand Rapids, Mich., Oct. 5.

[I may explain to our readers, that the advantage the hot-air engine has over the windmill is this: With the windmill you must have a large tank or reservoir for storage, in order that you may have water to use when the wind does not blow. With the hot-air engine, however, and a good supply of water, you may pump the water just as you want to use it. Of course, some sort of reservoir is a great convenience, but it need not be of so great capacity as for the windmill. Friend Davis does not tell us how high the engine lifts the 225 gallons of water in an hour. Of course, this makes quite a difference.]

HONEY NOT FIT TO EAT; DR. KELLOGG'S SLANDER STILL AFLOAT.

I inclose herewith a clipping that is going the rounds of the press, and should be glad to have your opinion of it through GLEANINGS. I pronounce the whole thing false, but there are thousands of people who will believe it true.

Fort Smith, Ark., Aug. 22. Z. WILLS.

[The clipping referred to was given on page 235, 1892. It came from Dr. Kellogg, of Battle Creek, Mich., and is one of the wildest statements that ever came from the pen of a man in his position. Honey, as all human experience proves, besides its place in the Bible economy, is one of the *best* articles of food; and while some kinds may not be good, it by no means follows that *none* is good. So far as cleanness and purity are concerned, honey may well be the standard of comparison. Mr. K. is no authority on honey.]

GOLDEN COREOPSIS.

Inclosed are a few flowers of the large flowering Spanish needle. Since I saw it in Iowa in 1890 I have seen it in this part of the State. About three miles from here are two large patches of it, one on each side of the Muskingum River, and about a mile apart. Both are on waste land, with a depression in the ground. I went last spring to look after them, and carried home with me half a dozen little plants and put them in my garden, and now they are a perfect blaze of beautiful yellow flowers, and the bees work on them from daylight till dark, the same as on the scrophularia. That and the blackheart are about all they have just now to

work on. It would be an acquisition to any flower-garden, blooming as it does at this very dry time. But it would not do to call it Spanish needle. Let's call it "golden coreopsis." I haven't seen the needles yet, but I don't think they amount to any thing, as the other kind does. W. S. IMLAY.

Zanesville, O., Sept. 4.

MY WAY OF SCRAPING SECTIONS.

This cut represents the way I clean sections. With a pocket-knife in the right hand, and by dextrous movements of the left, I can scrape them very fast. A 4¼x4¼ is easily held in the hand, but larger sizes can not be.

R. B. KIDDER.

Columbus, Wis.

REPORTS ENCOURAGING.

Here is my bees and honey report. Last winter I lost 2 out of 24; doubled up to 19, and got 400 lbs. of comb honey, and 800 of extracted. One colony made 260 lbs. of extracted.

Peters, Mich., Oct. 7. FRED A. HUND.

My bees have done very well this season. I got 1200 filled sections ready for market from 32 colonies, spring count, from raspberries, clover, and wild cotton; no basswood here. White clover was very plentiful, and yielded much honey. J. S. KLOCK.

Urban, Pa., Aug. 1.

ONE HUNDRED POUNDS PER COLONY FOR GEORGIA.

In Sept. 15th GLEANINGS friend Holt, of Americus, Ga., says that the honey crop in his vicinity is a failure. In this section (57 miles southwest) it has been immense. I have had several hives give me 100 lbs. of comb honey, without any attention except to put on sections (or frames in some), with only small starters in them, and take off the honey when I could get a chance. L. A. DUGGAN.

Cuthbert, Ga., Sept. 27.

REPORTS DISCOURAGING.

Bees have made but very little surplus honey. I have seven stands, and have not had a swarm this past summer, and not over 85 lbs. of surplus honey. This is about the same with my neighbors. H. M. KUME.

Bancroft, Neb., Sept. 11.

Inclosed please find $1.00 for GLEANINGS for another year. Although our honey crop was an entire failure this year, I can not afford to do without GLEANINGS. It looks as though our crop of honey for another year would be a failure also. Last winter killed out all the clover that would have bloomed this year. There was a fine crop came up from the seed this spring that would have bloomed next year; but the severe drouth that we are having now, and have had for the last two months, has killed all the young clover, so there will be very little for bees to work on next year in this part of the country, and that is what we depend on for our surplus honey, as we have no basswood here.

Delhi, Ill., Sept. 14. H. D. EDWARDS.

NOTES OF TRAVEL.

ON THE WHEEL.

But his disciples came and besought him, saying, Send her away; for she crieth after us. But he answered and said, I am not sent but unto the lost sheep of the house of Israel.—MATT. 15:23, 24.

I do not know, friends, but I am getting things mixed up a little in this issue. Perhaps what I have written under the title of Our Homes ought to be here, and this ought to be there. At any rate, I am going to talk to you just now about some of the homes of our land. I had asked Mrs. Root for a very early supper; and while we were eating, there was some talk about my thirteen-mile ride before dark. The barometer was falling rapidly, and the clouds in the west looked rather "portentous of a storm." Mother suggested that perhaps I had better give it up; but I replied there was a special engagement, and that I must get to Wadsworth, 13 miles, in some way, rain or no rain. I remember one of the children saying something like this:

"I really believe father likes to get caught in the rain, or get lost, or get somewhere on the wrong road, just so he can have some new adventures, and something exciting to tell about."

These may not have been the exact words, but it was something in that line; and as my daughter ended, I began to think that she had come pretty near the truth after all. Dear friends, I do enjoy mishaps or emergencies that make it necessary for me to go into the homes scattered about our land. The homes where our people live are a matter to me of great interest—especially the homes of our farming people in this great nation of ours. I sympathize with them and I am anxious about them.

I should not have been quite so late in getting my start, but we have just succeeded in confining the exhaust steam from our 100-horse-power engine so as to carry it through large drain-tiles under ground, from the factory to our home. A pipe containing hot water is supported in the center of this big tile, and the radiators all over the house are now so hot as to blister your hand if you are not careful how you touch them. Not only while the steam is passing through the tiles, but even 12 hours or more after the steam has been shut off, they are scalding hot. Furthermore, we are building plant-beds, and some of them are already planted to lettuce, right over the pathway of this underground passage.

Before mounting my wheel I had to take just one more look and give my last directions to the men who were busy at work on the beds. At a quarter past four I was spinning along the river road on my way. As I reached River Styx, a little more than half way, it began to be quite dark, and I heard the noise of the rushing wind as the great black clouds began to come directly overhead. The road had just been patted down smooth since the rain; and the broad-tired wheels belonging to the German wagons used in that neighborhood made just a beautiful track for the wheel. Even when it got to be quite dark I could see the shining wheel-tracks, and I kept my wheel in the path with but little trouble. Pretty soon there seemed to be a wonderful ease and freedom to my wheel. I went up hill and down as if some unseen power were lifting me and sending me along. Now, I have had this feeling before, and I always forget the cause; and it was not until I saw the leaves from the trees whirling along beside me that I recognized that it was the wind from that black cloud that was car-

rying me along almost as if I were flying. You see, the wind was just behind me, and my speed was just about equal to that of the wind. So I sailed along in company with the flying leaves, feeling no wind at all. There is something strange about this—feeling yourself in a dead calm when there is a tremendous wind going along with you. I was thinking I should make Wadsworth in ample time if I could only keep my wheel in the beaten wagon-track. But, alas! the big drops of rain put an end to my flights of fancy. Just ahead of me I saw a bright light. It was so dark I could scarcely see the building; but I knew it was a little piece off from the road. I tried to find the gate, but ran past it and up into the barnyard. By the time I had found the door of the house I was pretty thoroughly drenched with rain. I tried to get the man whom I found there to hitch up and carry me to Wadsworth. But he said his wife did not like to stay alone in the night; and as they hadn't lived there very long, they were not very much acquainted with anybody. In fact, the neighbors had not *been* very neighborly to the new comers.

It was getting late, and I was damp and wet. I do not really relish riding in a buggy any of the time; and then it occurred to me that, before I had the wheel, I used to be pretty good on a walk; so I borrowed an umbrella and was going to start out, when my friends very kindly tendered me the use of a lighted lantern. The lantern was bright and clean. There was not a bit of dust on the tinwork, nor a particle of smoke or soot on the glass; in fact, it was just such a lantern as I should not feel ashamed of, even if I were to go among crowds of educated and intelligent people. Why do I speak of such trifling things? Because they always mean something. I made up my mind that that woman was a Christian, whether her husband was or not; and I got my impressions a good deal from that lantern. My friends, if a stranger should come into your house out of the dark, what would the lantern look like which you would have to offer to him? More of this anon.

I found the roads quite slippery, and I did not make very rapid progress. In fact, it took me over an hour to walk three miles and a half. About a mile ahead was one of those beautiful soft-water springs I have told you about. If I rode in a buggy I could not enjoy a drink from that spring; but by the time I got there with my lantern and umbrella I was quite ready to enjoy a cupful, and to thank God for it.

The town of Wadsworth has, for a number of years, been a "dry," or prohibition town, and this in spite of railroads and coal-mines in the immediate neighborhood. Within the past year, however, some strange state of affairs has come about, and the saloons have been called back—hence this special temperance meeting. I sat a little while by a hot stove, turning myself until I was pretty thoroughly dried, when I was called upon the platform. The house was filled, and the clergymen of the place were together on the platform. Before the speaking commenced, the pastor of the church leaned over and whispered to me something like this:

"Mr. Root, you have no conception of the apathy, indifference, and general discouragement that have got hold of our people here in Wadsworth. The whisky men have crowded on to us, and six new saloons are now bright with new paint, and doing business full blast. A part of our people think there is no use trying—they are too much for us any way. Another part seem to think things are not so terribly bad, and there is no use making any fuss about it; still another part have become discouraged, and do not care. If you and brother Russell can wake us up to a sense of our shortcomings we shall consider you a God-send."

Howard H. Russell was the speaker. I was simply to introduce him, and to back him up when he seemed to need backing. But I am not going to talk temperance to you just now.

By daylight next morning I picked up my umbrella and lantern, and started back on foot. Permit me to say I did not take a particle of cold; and, like my friend Wilbur Fenn in regard to the potato-bugs, I did not expect to take cold. I have learned, by years of experience, that a thorough drenching by a summer shower does me no harm at all, providing I can keep up some sort of exercise so as to keep warm. In fact, I was just getting over a cold contracted by staying out too long when looking at the fireworks at the World's Fair; but my wetting did not aggravate the cold a particle. As I passed the spring I had another delicious drink of that beautiful soft spring water. If any man who is addicted to intemperance enjoys *his* drinks as much as I do quenching my thirst at these springs that God has given, then I am mistaken. Any way, my drinks are taken with a clear conscience and a thankful spirit, with the conviction that God's love is over and around me. The man who drinks any intoxicant does not have this feeling. Am I not right?

I told the friends I stopped with the evening before, that I should like to take breakfast with them. Accordingly a nice breakfast was in waiting as I came up the front walk. I could find the gate easily enough by daylight. We had potatoes and ham, and fried corn-meal mush with syrup. When I asked them where they attended church, the husband and wife exchanged looks. Finally Mr. T. replied:

"Why, Mr. Root, we do not go to church much anywhere since we have got married."

The wife looked from me to her husband, and then added with a smile, "Please tell Mr. Root whose fault it is that we have not been to church since we were married."

The latter was not said in a complaining tone, but with an appealing look that I understood. He answered:

"Well, I am hired to work this farm of over a hundred acres, and I do it almost all myself. Of course, we exchange work some, but I am sure I work for them more than they work for me; and on Sunday I am too tired to do any thing but rest and get ready for the work of the next day."

"Look here, friend T., you have been a church-member and a Sunday-school teacher. Now tell me truly, don't you feel a great deal *more* tired when you stay at home than when you attend worship and do your part toward remembering the Sabbath day to keep it holy?"

I had to smile pretty broadly when his answer came out, bright and clear:

"Yes, sir, I have noticed that very thing."

As his wife and I both laughed at his frank, candid admission, he added:

"Another thing, a body feels mean Sunday night, when he has not attended church nor worship of any sort."

Just a mile and a half away was a Methodist church that was in sad need of members. Two miles in another direction was a Lutheran church. The good wife, before marriage, had attended the latter, while her husband was a Methodist. How often we come upon such a state of affairs as this! and how sad it is that the result is also too often the case that they do not go to church at all as a consequence! I advised them to attend service where the wife and mother (a child just a year old sat in a high-chair) felt at home; and as this was Sat-

urday morning I put in an earnest plea to have them take that same horse and buggy that was to take me to Wadsworth, and go to church on the morrow. Mr. T. urged that it was so late in the fall the weather would be bad; but that, when the weather would be good next spring, they would start going to church regularly. I had become pretty well acquainted by this time, and I commenced pleading:

"No, no! don't wait until next summer. Make a start to-morrow. The Weather Bureau says it will be a fine day. I am sure the baby will behave all right; and even if she does not, it will not, by any means, spoil the services. Go and tell that Lutheran minister I sent you."

Here the wife put in, that they (at that particular church) could not afford preaching oftener than once every other week, and the morrow was the wrong day.

"Well, my friends, if you do not go to-morrow give me your promise that you will attend the Sunday after, providing it does not rain. I do not want to leave this pleasant home of yours until I see you both started once more back in the straight and narrow path from which you have been so long straying."

As I rose up I took some money from my pocket, and was going to pay for my breakfast. My host, however, insisted that he would not take any pay from any one who had tried so hard to have them do what they ought to do.

I have seen this state of affairs before. When I have undertaken to exhort people toward God's kingdom and his righteousness they will not let me pay what is justly their due. But this time I was equal to the occasion. I laid a half-dollar on the table, and told them that, if they would not accept pay for the breakfast, they must take that coin as their first offering to the church from which they had so long absented themselves; and I got the promise.

The little incident I have mentioned is what suggested my text—especially the fore part of it referring to the lost sheep of the house of Israel. Go where I may, I find much of this state of affairs—people who used to be church-members, but who have backslidden; and very often they confess, as frankly as did friend T., that there is no happiness nor satisfaction in deserting God's cause. How bright the morning seemed, and how easy it was to spin over the ground after that little bit of spiritual exhortation! I was happy because I had had just a little taste of laying up treasures in heaven instead of on earth, "where moth and rust doth corrupt, and where thieves break through and steal."

Shall I tell you why those six saloons have just started up in full blast in Wadsworth? Why, it is just because Christian people have backslidden and deserted. Do you remember the text from Malachi—"Bring ye all the tithes into the storehouse; prove me now herewith, saith the Lord of hosts"?—you know the rest. The whole trouble with the temperance cause—the whole trouble with our nation—is because of the indifference of professing Christians.

Last week somebody went into my neighbor's carriage-house and took not only his double harness, but his single harness; in fact, they stole all the harnesses he had. When I was off on my wheel in the adjoining county of Summit, a relative told me that his new buggy harness had just been stolen. He is not a professor of religion; in fact, he has been known far and wide for being a good deal the other way; but, when I said, "Look here, friends, the shortest and quickest remedy for this state of affairs is to start more Sunday-schools, and all of us lend a hand," he said he heartily agreed with me—at least, he believed that the shortest and quickest remedy was to educate our children so that they should not grow up thieves. I have been told that thieving is getting to be more common all over our land. Stealing harnesses is a new departure, and there are other new departures coming on. Let me give you a hint.

The man who owned the farm where I got my breakfast is the owner of *five* farms. He has five, and his neighbors do not have any. Yes, I agree with a great lot of you who insist that this is a wrong state of affairs; but the blame by no means rests *entirely* with the man who has five farms. What effect do you suppose those six new saloons will have on the state of affairs where one man has five farms and his neighbors do not have any? Will it help matters? And then suppose the people all around get into a fashion of staying at home from church. Will *that* help matters? Certainly not.* "Seek ye first the kingdom of God, and his righteousness," and all these things will be mended. The Bible says so. It will stop saloon-keepers from getting the upper hand; it will stop folks from stealing harnesses; it will bring about a pleasant and friendly solution of the difficulties between labor and capital. How shall we proceed toward seeking God's kingdom and his righteousness? Why, wake up and help to fill the places of worship that our fathers have scattered over our land. Go next Sunday; take everybody along you can get hold of. Do not wait till spring; do not stop on account of the weather; lend a hand toward hunting up the lost sheep of the house of Israel, and ye shall have peace on earth and treasures in heaven. By the way, some of our unbelieving friends suggest that we *Christian* people are looking toward heaven *after* this world is done with. Well, I want to tell you that such people are behind the times. The Christian people of the present day—that is, the intelligent and wideawake ones—believe in heaven here on *earth*, and they believe in it right along every day, and are trying to bring it about. "Thy kingdom come, thy will be done on earth as it is in heaven." Does that mean that we are to wait until we are *dead?* I am rather afraid the Christian who does not try to make a heaven or to hunt up a heaven *here* on *earth* will never find one when life is past.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

HIGH-PRESSURE GARDENING NOV. 1.

Did you ever! This month of October—at least the latter part of it—has been almost the best month for gardening during the whole year. There has been no frost, but abundant warm rains, and every thing that was not killed by the frost three or four weeks ago has just been booming. The value of elevated land for late garden crops comes in finely right here. Potatoes and tomatoes on a hillside are still green and growing, when on the low grounds they were killed long ago by the frost; and the late tomatoes bring fully as good prices as they did during the first of the season.

*The professor of religion who stops going to church will be just the man to listen to a suggestion from Satan, that there is something unfair about his neighbor having *five* farms while he has none at all. After awhile he will be ready for the suggestion that it is no more than fair that he should help himself, in order to make things right. May be he would not take a harness right away, but he will after awhile. When he becomes hardened a little more he will be ready for bloodshed and all the rest.

Beets that were put in late are just growing famously; and cabbages that we despaired of are heading up as nice as any thing I ever saw.

The only real nice cauliflower of the season is now being harvested; and, by the way, I am satisfied, from several years' experience, that the very best time in the world to raise cauliflower is in October—sometimes clear into November. Sow the seed in July, and put out your plants in September and October; keep them cultivated; and by having them thus late you will have very little trouble from the cabbage-worm or blue aphis.

We are also going to have a nice lot of extra fine celery; in fact, we are now selling about as fine celery as I ever saw. It stood all through the summer without making any growth of any account; but since the fall rains it has started up and is doing beautifully.

We might have had some cucumbers, and done well with them, if we had only put them in our plant-beds and covered them with sash when we had those frosts.

Our Grand Rapids lettuce, in those beds spoken of elsewhere (over the exhaust-steam pipes between the house and factory), are just doing grandly. Some of our late onions, that would not grow on account of a lack of rain, have started again; and although they will not ripen bulbs, we are selling them on the wagon for bunch onions pretty fairly.

Who ever heard of green peas the first of November? Well, we are having real nice ones. The frost made some of the pods look speckled; but since then the peas have made a new growth, and are now full of blossoms and new peas, and we are having quite a good many pickings. They bring 8 cts. per quart readily. It is a little funny that frost hurts peas in the fall, while in the spring they will stand quite a freeze.

Everybody is wanting peppers now; but ours were not planted so we could cover them, so we have not any at all.

You remember I told you about the Rural New-Yorker potatoes. Well, we dug from that piece (⅛ acre) 116 bushels of the finest potatoes I ever saw in my life. Some old farmers said that, during a dry season, there might be a great growth of vines, but there would not be any potatoes worth speaking of. Well, all the potatoes of this particular crop are large and smooth. One great smooth nice-shaped potato weighed 1 lb. 11 oz., and there are hundreds of them that weigh over a pound each. The ground was heavily manured last fall, and sowed to rye. The rye was turned under just before the sixty-hour rain, and this rye kept the ground up comparatively loose. After the rain was over, as soon as the ground was sufficiently dry we worked it up fine, soft, and mellow, and planted our potatoes. It was so late in the season they had long sprouts on, and were a good deal wilted; but we cut them carefully, without breaking many of the sprouts, and covered them nicely, and gave them good cultivation. If it had not been for this crop of Rurals I should have begun to think my ground was not suitable for potatoes, and that *I* did not know how to raise them, even if the ground *were* suitable.

We are now having the only real clean smooth radishes we have raised this season. All summer long our radishes, and, later, our turnips, were scraggly, wormy, and bitter; now they are smooth, clean, and crisp. We sold our first crop of turnips at 10 cts. a peck, and could not get rid of them at that price; but before I knew it the boys were getting *25 cts.* a peck for the late ones. When I remonstrated for charging so big a price, they said the turnips were so handsome and crisp that folks paid it without saying a word, and that seemed to be a conclusive argument. If the people only knew how many of our crops had not paid the cost of the labor during the late drouth they might have a little charity for us, even if we do take big prices when we have nice stuff.

HORSERADISH: HOW TO FIND A MARKET FOR IT.

Mr. Root:—Do you handle horseradish in any shape? If so, I could furnish you almost any amount of roots this fall or next spring. Do you know of any machine for grinding or grating the roots, and is there a market for it put up in bottles? Any information in regard to the horseradish business will be thankfully received.

We had the best run of clover honey this season I have known for many years; but basswood and buckwheat was a failure.

Mexico, N. Y., Oct. 3. Geo. T. Wheeler.

[Yes, friend W., we do handle horseradish-roots, but I do not believe it would pay you to ship so far as this. We pay from one cent to three cents per lb. for roots washed and scraped, ready to grind up. The price depends upon whether the roots are smooth and clean, or scraggly and not very well cleaned. The machine for grinding them is very simple. A tin tube about the size of a pint cup is fastened to the end of a wooden mandrel. This tube is punched full of holes, like a horseradish grater—the burr, of course, being outward. You can revolve the cylinder by hand, by foot, or by steam power. It should be on an incline, so the grated horseradish will drop out from the open end. The roots are pushed into a suitable hopper, so as to strike against the rough tin cylinder. We put it up in Muth's 1-lb. honey-jars, such as are advertised in our price list. We retail it around the town at 15 cents per bottle, and when the men go round the next time they pay 5 cents back again for the empty bottle; so the consumer pays only 10 cents for the horseradish. The whole expense of the horseradish, grating it up, and the white-wine vinegar, is only about 4 cents per bottle. You can use cider vinegar if you choose, but the product is not so attractive to customers; and, besides, it will not keep nearly as long as where you use the best white-wine pickling vinegar. If put up with the latter at this season of the year, and kept in a cold room, it ought to keep till spring. We think, however, it is best to put it up about once in two weeks.]

WHY SOME OF US HAVE CONFLICTS WITH SATAN; A SUGGESTION.

I read a story, when a boy, of a learned judge in the South, who was an unbeliever, but who had a colored servant in whom he had great confidence, who was an earnest Christian. They talked freely together on their journeys over the judge's circuit, and the servant often complained of his troubles with "de debbil." The master, however, was not troubled in that way, and did not believe in the existence of Satan. On one occasion, the circuit having been completed, the judge decided to go hunting ducks. Approaching a pond with a goodly number of birds on its surface, he crept cautiously within shooting distance, and fired both barrels of his gun. Four or five ducks were killed and as many more wounded. Leaving the dead ducks where they were, the judge began running and splashing around in a great hurry after the wounded ones, collecting the dead ones at his leisure.

On returning to the carriage with his game, he was accosted by Sambo with, "I got it now, massa."

"Got what?" asked the judge.

"Bout de debbil," replied Sambo; "you pay no 'tention to de *dead* ducks, but go splashing 'round after dem dat's tryin' to get away. So de debbil sees me tryin' to get away from him, an' he keep at me *all de time*, but he jes' let you alone, cause he *knows* he got *you*, shore!" Burdett Hassett.

Bonair, Ia.

OURSELVES AND OUR NEIGHBORS.

The truth shall make you free.—JOHN 8:32.

There are so many grand lessons to be learned at the World's Fair that I shall never be able, probably, to even speak of all of them; but I am going to take them up from time to time as they occur to me. The first thing that met my gaze and pleased me were the arrangements for pure drinking-water on the grounds—first, the free drinking-water. Large tanks were to be met with all over the grounds and throughout the buildings, labeled something like this: "Sterilized filtered water;" and this water is very fair—much better than we ordinarily find in traveling through any city or country. It comes from the lake, eight miles from shore, if I am correct. The great city of Chicago has been at great expense to provide good water for her people. But besides this were other stands for drinking-water also, scattered everywhere, so that one would scarcely be obliged to make an inquiry. These booths were plainly lettered, "Waukesha hygeia spring water—a penny a glass." A good many may complain of being obliged to pay for drinking-water; but I don't. I find it a great privilege to get the most beautiful spring water at any time I feel thirsty, for only a penny a glass. Let me digress a little.

In this big world of ours, it is a very hard matter indeed to keep any sort of institution in good running order without pay. One of my hobbies has been for years to furnish the public good drinking-water, free of charge or annoyance, and I am at it yet. But let me tell you some of the difficulties. If the water is to be pumped, almost any pump that can be procured will soon be out of order, and prove to be a bill of expense. To get rid of the pump, our big windmill on the hill keeps the water so it runs itself by opening the hydrant. Well, in this case even the best hydrants are soon worn out. You see, we have a liberal patronage here. Another thing, the expense of drinking-cups is quite an item. One might think the great thirsty world would be so thankful that they would not carry away the bright new tin cup. Alas for human depravity! every little while our cups are carried away. Tie them up with a string? Yes, we tried that; but even the stoutest string was broken and the cup gone. A chain did some better; but it was an annoyance by getting tangled up and hindering people. Sometimes two or more vehicles would stop at once near the hydrant. Ladies would like a drink without the necessity of getting out. If the cup were chained up they would be bothered, and we should be bothered by their coming into the store for a cup that was not chained.

Now, it is not altogether *vicious* people who take away our cups. A few days ago a carriageful of ladies stopped for a drink. The cup was passed from one to another without obliging them to get out. When they were gone the cup was missing. They seemed to be intelligent, well-bred people, and I *knew* they did not *steal* it. Let me tell you what they did do. In the afternoon they came back laughing and chatting. As they passed along, one of them took our tin cup, and, to save getting out or stopping the team, she threw it toward the hydrant. Then they had a good deal of merriment and drove off. Had I not seen it, and picked it out of the dirt, the next team would have crushed it into the mud. People are thoughtless; so I have decided to foot the bill for tin cups and repairs to the hydrant, and get my pay in seeing people refreshed and made happy, and many times induced to drink water when they otherwise might be induced to drink something else.

Now, while there are vicious people and thoughtless people in the world, there are also thousands upon thousands of good people who love humanity, and who came not into the world to be ministered unto, but to minister to others. It is these people who furnish drinking-places and cups; and there are many of these people who would be glad to help pay the expense of public drinking-places if they were permitted. This enterprise on the grounds of the World's Fair is the brightest invention in this line that has ever come under my observation. The whole establishment, or little booth, is neat and artistic. Then there is a lot of drinking-glasses made of pure flint glass, and so thin that, even in hot weather, the drinking-cup is not heavy enough to cool off perceptibly the contents. A great heavy glass, or a heavy dish of any kind, is not the thing for a drink, unless, indeed, your heavy dish is deposited in the spring under water when it is not in use. Well, when you want a drink of Waukesha spring water you put a penny in a slot. The glass is all ready, right under the outlet. This penny, by automatic machinery, lets out a little more than a cupful of water. The surplus rinses the tumbler all over—outside as well as in; and as this pure spring water leaves no residue, the sparkling glass, wet all over, as if it had been dipped in a spring, glistening with its contents, stands before you. For fear you may not have a penny handy, a lady sits at the counter, with heaps of pennies—heaps of five and ten. She swaps the pennies for nickels or dimes, sees that the glasses are put back ready to be filled, and looks after the machine so that nobody steals the beautiful glass cups. The pennies pay her for her supervision—pay for the automatic machinery, and, I suppose, pay for laying the pipes away up into Wisconsin, more than a hundred miles, to the locality of these beautiful springs. I for one feel glad to think that it was my privilege to contribute pennies to help pay for this wonderful enterprise. Why, if such an arrangement could be started and kept going on the streets of our towns and cities, furnishing water absolutely pure, it seems to me it must be patronized tremendously by a grateful public. During the warm days, all these places for drinking-water were patronized heavily; but by far the greater part of the people seemed to prefer to pay the penny rather than to go to the free places. The fact is, everybody seemed to pronounce the spring water the nicest and most beautiful water they ever tasted. I am glad to see that I am not alone in my decision that pure soft water is more wholesome than the various hard waters containing such a large amount of chemicals. I want drinking-water so pure that, when it evaporates on the surface of a glass, no cloudiness, indicating the presence of chemicals, is to be found.

Of course, there were drinking-places for other things than water. A great many of the foreigners, and perhaps a good many who were not so foreign either, patronized the beer-establishments. A glass of beer could be bought anywhere for 5 cents, while a cup of coffee or lemonade was always 10 cents. Let me say, to the credit of the Fair people, however, that a glass of milk was also 5 cents. But I want to say a word about the beer. I do not know in regard to its quality; but these friends of ours, whom perhaps we do not know very well, seemed to have a fashion of sitting down and sipping their beer leisurely. Young America would take a great big glassful at one swallow, and perhaps another and still another. Our German people sit down to a table, and sip

leisurely while they eat their crackers and cheese—perhaps taking 15 minutes to drink a single glass. In this way they feel little or none of the intoxicating effect; while if a whole glass or more were poured down into an empty stomach it would produce at least a *little* intoxication. Our cousins from across the water have been so much accustomed to their way that they would not only regard it as pretty hard, but unkind and uncourteous, if they could not come to the World's Fair and do as they do at home in their fatherland. Now, I am not defending the sale of beer at the grounds of the World's Fair, nor on any other fairgrounds. I am simply suggesting that we ought to take all these things into consideration when we act, and go forward in our temperance work with at least a kindly and charitable spirit.

It seems to have been the intention of the managers of the World's Fair that the principal part of the eating and drinking, as well as all sleeping, should be done outside of the gates. In fact, there is not room inside. And in this line I would have tried, had I been one of the managers, to make these foreign friends feel that it was not so very unkind after all to ask them to drink their *beer* outside of the grounds if they must have it at all. While beer was five cents a glass, lemonade was 10; soda water 10 also, and with ice-cream 15. The only five-cent beverage besides beer and milk was orange cider; and the orange-cider stands were patronized to such an extent that, on Chicago day, a great many stands sold out entirely—could not get enough. During the afternoon I saw a great string of people. It was in the form of a circle, starting from a refreshment-stand, and going out in a great big loop, coming around again to the stand. It was formed of people getting in line so as to get their turn in getting orange cider. They did this thing at the Ferris wheel, at the ticket-offices, and many other places where there was liable to be a dispute as to whose turn it should be to be served first. The multitudes had, it seems, adopted it, deciding it to be the only fair and courteous way; and these loops of humanity, during the days of the greatest rush, were an amazing spectacle. It rejoiced my heart to see them; and in the light of our text I believe it was *God's* work. In this way women and children, as well as great big stout men, must take their proper allotted place in waiting; and nobody seemed inclined to make "might right." In fact, these exceedingly nice people—the Columbian Guards—would have interfered if big people, presuming on their bigness, had undertaken to be selfish. The Columbian Guards are good-sized men—that is, they are tall if not large around. They are supposed to be tall enough to look over the crowd and see what is going on, and they will tell you any thing you want to know, with the most pleasant good nature, even if a line of people stands waiting for a chance to put their questions. I was asking them for information almost constantly, sometimes waiting for my turn, but I did not hear an uncourteous or uncivil reply while there.

My talk to-day must necessarily be rambling, and I want to digress a little here. One of the first things Mrs. Root did was to lose her silk umbrella. She left it in a closet. One of the guards, however, told us just what to do; and next morning when we presented ourselves at the "Lost and Found Bureau," and described the umbrella, the officer in charge put his hand on it instantly, and handed it to her. Did anybody ever hear of having a lot of officers employed to pick up things people leave around without their names attached, and deliver them safely, before? It is the same way with children. On Chicago day, I am told, seventy little friendless wanderers were taken charge of by the bureau devoted to this purpose. They were fed and amused, and catechised in regard to their parents, until said parents found out about the "Lost-Children Bureau," and came after their "property."

But I have not got through with drinks yet. Enormous quantities of orange cider were used up. People laughed at me when I maintained it was genuine I told them I had seen heaps of cull oranges at Riverside, Cal., almost as big as a meeting-house. The only use made of them was to get out the seeds by machinery, and use the seeds for raising seedling stock to be grafted. I soberly assured the incredulous that this orange cider was made of these refuse oranges; and in different parts of the grounds you might have heard the venders of orange cider saying, "Orange cider! absolutely pure juice of oranges from Florida." As I looked at these men I did not think it possible that they could so unblushingly tell an untruth. Pretty soon I heard another vender say, "The *only pure* orange juice sold on the grounds!" and then some other vender took up the strain and said *his* was the only absolutely pure orange juice. To cap the climax, a friend of mine who runs a chair told me that an Oberlin student was offered a position at good wages; but one of the conditions was, he was to tell the great crowds that the orange cider was absolutely pure orange juice, while he and all the rest of the officers knew perfectly well that it was manufactured at that very time, right under their eyes, every day, right on the grounds, as fast as the public demand required it. Thank God there was at least one Oberlin student who would have nothing whatever to do with such a business, no matter how much pay they offered him. Now, I did not start this paper with the view of complaining. I made up my mind to accept what I found at the great World's Fair, and do very little criticising; but in the name of the government of the United States, and in the name of the great God who made us all, and who made us brothers, even though the wide seas separate us, I do protest against this awful untruth; and to the officers of the World's Fair, or whoever else permits this thing to go on unreproved, I call them to order, and ask them if they can hold up their heads and look an honest man or woman in the face while being a party to this thing that should make every citizen of our country blush and cry out for shame. May God help us if we have got to such a pass that this thing can be carried on publicly and unblushingly. If orange cider is not orange cider at all, but something manufactured from chemicals, how about our tea and coffee, our butter, our maple sugar, and, finally, our honey?

Ever since this thing was told me, I have been wondering whether it were not a mistake, and that some real orange cider has been brought from California or Florida. I am told there is not a drop of real orange cider offered for sale in our land; and yet the so-called stuff is to be purchased in every little town, and at almost every refreshment-stand. God forbid! How can we teach our children the grand truth that stands over the arch of the peristyle, "Ye shall know the *truth*, and the *truth* shall make you free," and then admit to them that all the orange cider sold on that great fairground is not made of orange juice at all—no, not even while the venders vie with each other in making themselves hoarse by insisting again and again, with all the vehemence that long practice has taught them so well, that it is pure *orange juice* when they know it is a vile falsehood? The excuse has been urged, that

physicians pronounce it a refreshing and healthful drink, and the people like it, and hand over their nickels. But I do not think this excuse helps it a particle. If people want it, and it is a healthful drink, by all means let them have it; but call it *what it is*. For the sake of the example before our children; for humanity's sake, and for God's sake, give it some name that does not brand all who have to do with its sale as liars and cheats. I think it quite likely that, under certain conditions of the system, a little tartaric acid and sugar with drinking-water may be wholesome and beneficial to the health, just as lemonade is wholesome and beneficial, or just as soda water and seidlitz powders are beneficial. But lies are never beneficial to humanity. Jesus said,

Ye are of your father the devil, and the lusts of your father ye will do. He was a murderer from the beginning, and abode not in the truth, because there is no truth in him. When he speaketh a lie, he speaketh of his own; for he is a liar, and the father of it.

THE INTERNAL WATER-CURE; DOCTORING WITHOUT MEDICINE, ETC.

Several of the friends are inquiring for the results of my experience, and perhaps experiments, in the above line up to the present date. In regard to the water-cure, I have no reason to change my opinion, with the following exception: Where one gets into the habit of using hot-water injections every day he will soon find that he is losing the benefit of at least a part of the food he eats. This is indicated by exhaustion, more or less, just before meal-times. The point is, that a considerable part of the nutriment contained in the food, and very likely a most essential part, is taken by the proper organs while the residue is in the colon. In good health it should remain in the colon until every particle of nutriment is extracted. The excrement should be in hard compact lumps or balls. It reminds me of getting beeswax out of old combs. Unless the residue is put under heat and pressure both, a little wax will remain. If the hot-water treatment be used in the morning, before breakfast, very likely the result is not as debilitating; but if your digestion is disordered you will, perhaps, sleep a good deal better at night by having the contents of the colon removed. Now, where there is headache, distress in the bowels, or perhaps sick headache, it is better to remove the cause of the mischief than to let it remain. But a much better way is to get the digestive apparatus to work all right itself, without assistance in the way of the water remedy. Perhaps this can not always be managed; but I think it can a great many times by being very careful not to eat more than your system can properly take care of. Do not overeat, *whatever*, you do. Another thing, when your food distresses you, and digestion is a long while under way, try cutting off *liquids* while at your meals. A good many times I think one receives benefit by omitting even milk; or perhaps you can use only a little milk while eating. An hour or more after a meal, if you still feel thirsty, take some water, or milk if you choose, or a little fruit, that you have found by experience agrees with you. I think a good many people suffer from indigestion because they keep diluting the gastric juice by too much liquid while eating. I would still also recommend having your supper quite early, or, if you can manage it, skip supper entirely; or have for supper new milk right from the cow—nothing else. If you find some graham gems with the new milk do not distress you, take them also. Now a word more about the water-cure.

Where your digestion has got into a sort of chronic fashion of looseness, so that the hard balls that I have mentioned are not formed in the colon at all, the hot water is one of the best remedies to get nature into the right channel I know of. The simple operation of thoroughly washing and rinsing the colon seems to assist nature greatly in getting things in line*, and I think this method of doctoring without medicine is ever so much better than the use of any sort of drugs or even medicine of *any* kind. But after these things begin to go in the natural way, I would drop the water-cure. It has been suggested that, after depending on artificial means so long, nature will get so she will not work without it. I do not think this is true. I used the hot water every night for several months at a time; and then on going away from home I dropped it suddenly. Nature managed all right, but I did not sleep so well nights for a while. After a very few days, however, every thing seemed to go just about as well as when the hot water was used; and I am of the opinion that the colon *should* retain its contents until morning. In fact, I am quite sure one has more strength and endurance when he does so. There seems to be a final working over, and squeezing the contents of the colon, that is important—at least, you will find you have more endurance when the colon is given plenty of time to get through with the work; and I believe I feel the best when I am admonished, *some time during the forenoon*, that every last bit of nutriment has been extracted, and that nature has no further use for the accumulation.

The facts given above are not from my own experience alone, but I have talked with others in regard to the matter, and I feel pretty sure I am right. The proper use of the internal water-cure is a wonderful invention for humanity; but be sure you do not abuse it. When I find I have eaten something that does not agree with me, and that old peculiar headache begins to set in, I start at once for the hot-water treatment, no matter whether it be morning, noon, or night. Better get rid of the cause of the mischief, and commence over again, than to suffer headache and distress in the digestive organs.

One thing more: If you have reason to think that nature has not of herself, or will not of herself, empty the colon as *thoroughly* as it ought to be emptied, try the water after nature. Let nature do the work if she will, and give her full sway; but when she will not, and when you can, by so simple a means as the use of pure water, fit yourself for your duties in life, use the water; and, above all, when you feel your ignorance in regard to the workings of this complicated piece of mechanism God has given you—the human body—do not be backward in going to *him* and asking him to give you wisdom and understanding in that very line. Shall not he who fashioned these curious and intricate abiding-places for the human soul give us wisdom and guidance in regard to them when we come to him?

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*You know doctors have been telling us of the terrible diseases that result from letting the excrement of a sick person, in consequence of proximity of privies to wells or cisterns, get into the drinking-water. It is a terrible poison. Well, I have thought that, when one's health is out of order, the poisonous matter remaining in the colon may act like yeast to renew the disease day by day; but the thorough rinsing, with sufficient water, cleanses the colon, and permits the fresh good matter in it to perform its proper office.

GLEANINGS IN BEE CULTURE. A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS. ILLUSTRATED SEMI-MONTHLY 36 PAGES 7×10 $1.00 PER YEAR.

He that followeth me shall not walk in darkness.—JOHN 8:12.

OUR bees are all in their winter quarters—in fact, they have been, for that matter, for some time back. How are yours? Better late than never; but—*better never late.* Better still, if we had not been so last fall.

THE official report of the North American will appear in the *American Bee Journal*, and, later on, will be published in book form, for particulars regarding which, address G. W. York, editor *American Bee Journal*, 56 Fifth Ave., Chicago.

AFTER the season's sales of queens and nuclei, and after the fall's uniting, we have, all told, only 106 fair colonies put up for winter. They are all outdoors, packed in chaff or planer-shavings. Some are in two-story chaff hives; some in the one-story, and the rest in winter cases. All the clusters are under absorbing-cushions, with the exception of one, and that has a sealed cover. This is really all we care to risk that way, after last winter's experience.

MR. ALLEY, of the *Apiculturist*, has a characteristic, almost pleasant way of criticising those who differ with him, even if he does go at them sometimes with a club. *Our* opinions have come in the way of his criticisms at numerous times; and although his views, in our estimation, are, sometimes, extreme, his comments, instead of irritating, rather please us. Of late, our Massachusetts editor has been firing his gun at Dr. Miller. When we saw the doctor last he did not look as if he had been hit. Mr. Alley is evidently shooting too high.

ELSEWHERE Rambler refers to an extractor that throws out the honey from combs that revolve edgewise. He says that a 12-year-old boy, Claud Henderson, extracted with this machine 12 tons of honey, and that the machine runs easily. Our readers will remember that, three or four years ago, we were experimenting with an extractor built on this principle. As the combs did not have to be reversed, the idea at the time struck us very favorably, and several times we were on the eve of success. But our experiments showed that extractors of this description did not do the work as clean and with as little expenditure of power as those that receive the combs in the regular way. However, the fact that that boy extracted 12 tons with such a machine is enough to command attention. Perhaps Mr. J. F. McIntyre, who has made the subject of extractors quite a study, can give us some further hints along this line.

IN his article in another column, Rambler tells quite graphically of the murder of a bee-keeper. Both the murdered and the murderer were well-to-do people. Mr. Bohn himself seldom drank, this being only the second time. The question comes up, as it does every time, "Who was the real murderer—the saloon-keeper who sold the liquor that crazed the men and made them not themselves, or the man who pulled the trigger with result so fatal?" The probabilities are, that both are responsible; but how far either one may be guilty, only God can tell. The time is surely coming when the saloon-keeper will come in for his fair share of criminality; and, in our opinion, it should be a good big share. We regret to say, however, that the bee-keeper was the first one to resort to the use of the deadly firearm, and he was just as great a murderer *at heart* as the one who killed him—yes, more guilty, because his opponent may have been acting in self-defense.

THE BIG ATTENDANCE AT THE CHICAGO CONVENTION, AND WHAT IT MEANS.

ELSEWHERE we have referred to the large attendance at the North American convention. Some of our European bee-keepers, seeing this, might feel that we have not much to brag over, considering the fact that they sometimes have as many as 400 or 500 at their conventions—at least, we have been so informed. But if our European friends will consider for a moment the vast extent of the United States, and that some of our States taken alone are larger than France or Spain, and that England is no larger than Illinois, they will see that the bee-keepers who attended had to come in some instances thousands of miles, and thus they will get a better idea of what our 225 enrollment means to us Americans. Or let them imagine the whole continent of Europe under one government, having one central bee-association, and that we are to have a convention in Constantinople. How many bee-men in Scotland would feel like taking such a trip? or how many would travel from Moscow to Paris, or from London to Athens? These tremendous geographical distances actually confront us here. When a bee-keeper goes from San Francisco, on our Pacific coast, to St. Joseph, Mo., at our next convention, it is equivalent in distance to a man in London going clear across Europe to the Ural Mountains; and yet such a trip takes him only half way across our country, in a bee-line from San Francisco to New York. Another thing, our population does not exceed the fifth part of Europe, hence we have five times the area for gaining a subsistence without resorting to apiculture; and this alone would greatly reduce or keep down the number of bee-keepers. Every thing considered, the attendance at Chicago was very gratifying.

PHOTOGRAPH OF THE CHICAGO CONVENTION.

AN attempt was made to photograph the bee-keepers while in attendance at one of the sessions of the Chicago convention. The results were very good, considering the poor light, and the fact that the bee-keepers were scattered over the whole room. Some of the faces are necessarily out of focus, but the majority of them come out very well. In the foreground appears the familiar face of Hon. R. L. Taylor; also that of Hon. J. M. Hambaugh. Between these two is W. L. Coggshall, an extensive bee-keeper of New York. Toward the center of the room will be found the editors of the *Review*, *Canadian Bee Journal*, the *American Bee Journal*, and GLEANINGS. The last two sit in one chair, arm in arm. While this was purely accidental (there being a scarcity of chairs) we are glad to say that it indicates pretty fairly that the editors of two bee-journals can not only be on good speaking terms, but they can sit together in one chair, sleep together in one bed, or ride together in one sleeper, all of which is literally true, as we speak from personal knowledge. At one other time Bro. Hutchinson and Bro. Holtermann occupied the same chair, and there is no indication that these pleasant relations on the part of any of us will ever be "strained."

Near the editors of the bee-journals will be seen Mrs. Lucinda Harrison; Dr. C. C. Miller,

president; Frank Benton, secretary; Dr. A. B. Mason, an ex-president. In other parts of the room are the faces of prominent bee-keepers, but they will scarcely be recognized, as they happen to sit in such unfavorable positions.

Mr. W. Z. Hutchinson, of Flint, Mich., owns the negative from which this photo was made, and he will supply mounted prints of it at 50 cts. each. He also photographed himself (by the way, he is a first-class amateur photographer) and all of the principal honey-exhibits, a print of any one of which will be sent for 50 cts. The question may be asked whether we ourselves or Mr. H. will reproduce the photograph above mentioned. As for ourselves, we would say that the picture is not ours to engrave, even if it would come up well in half-tone.

TRAGIC DEATH OF TWO YORK-STATE BEE-KEEPERS.

ONE of the greatest enjoyments at the Chicago convention (as it is in every convention) was to greet old - time faces—faces of those whom we have either met before or have known quite intimately from their writings. Little did we think, however, when we shook the hand of that kindly old gentleman, Mr. J. VanDeusen, of J. VanDeusen & Sons, manufacturers of flat-bottomed foundation, of Sprout Brook, N. Y., that he was so soon to meet with so great a sorrow as that of the loss of his son and main stay in the business—C. C. VanDeusen—and his estimable daughter-in-law. The worst part of it is, they suffered death in a terrible railroad accident at Battle Creek, Mich., on the morning of Oct. 20. The accident was the result, as perhaps most of our readers know by this time by the press reports, of a terrible collision of railway trains. Among the 25 or 30 who were killed are included the names of our two bee-keeping friends. Mr. VanDeusen, it seems, was injured, and died shortly after his wife. His wife was pinned between the telescoped cars, and at first had no doubt of her escape; but as the wreck took fire it began to be evident that she was in danger. Before she could be released by the strong men, the flames had claimed their victim. We clip the following from the Cleveland *Leader:*

"You sha'n't burn, we'll get you out," cried the men heroically, as they wrestled frantically with the splintered timbers. There was a lull of speech for five minutes. The rescuers had become giants in strength and madmen in desperation, and they struggled wildly with the tangled mass of wood and iron. The woman was silent, and gazed imploringly and inquiringly into the faces of the firemen.

A MARTYR'S STRENGTH.

"My God! O my God!" suddenly burst from the lips of one of the heroic workers, and in that despairing heart-cry the helpless woman read her death-warrant. She gave one agonizing wail, and then her woman's weakness gave way to a martyr's strength.

"I can die—oh, yes! I can die if I must," she said soothingly to the strong men who were weeping in their impotent efforts. Again they struggled breathlessly to the rescue, but the flames were encircling them. "I am a Christian," she said resignedly, and a moment later her voice was raised in prayer. The flames completely encircled the helpless victim, and the firemen were driven away. As the blaze caught her arms, and as she fought to keep the flames from her face, she told her name and address, and left messages of love to her husband and family. The closing minute was a pathetic struggle against the inevitable; but it was the flesh that fought, and not the spirit. The white face of the woman gazed heavenward, and her lips moved in prayer. Even the fury of the flames that wreathed her limbs and blistered and curled the white flesh of her arms, was powerless to provoke a scream. Suddenly there was a swaying and surging of burning timbers around her. A wild groan burst simultaneously from the lips of the spectators, and strong men wept. Through their tears they saw the flames sweep around the face of the martyred woman, and her hair burned wildly for a moment. The head dropped to one side; as the victim inhaled the flames, the praying lips were stilled, and the soul of Mrs. VanDeusen had passed beyond the fury of the elements of earth. An hour later the husband, for whom she had left a loving message, joined her in the world to come.

In one sense the story above is awful, and in another it is most beautiful. Bee-keepers all over our land may be proud to know that, in their ranks, was once a woman who could die so heroically and bravely such an awful death, and yet without fear and without a scream.

Our business acquaintance with the VanDeusens has been exceedingly pleasant. Mr. C. C. VanDeusen, the one who died, was the bee-keeper of the firm, and our back volumes years ago show that he wrote a number of valuable articles. Along about this time a very pleasant correspondence sprang up, and it was evident that both our friend and his wife were earnest Christians. May the story told above so graphically, show that there is something in the life beyond to sustain one in the terrible hour of physical torture. We would not give the details as above, except that they teach a beautiful lesson.

TRADE NOTES.

PERFORATED ZINC.

THE EXACT SIZE THE PERFORATIONS SHOULD BE, ACCORDING TO DR. TINKER.

A short time ago we wrote a letter to Dr. G. L. Tinker, of New Philadelphia, O., asking his opinion with regard to the size of perforations as discussed editorially on p. 723. He has kindly replied; and as the article is a valuable one we commend it to the careful consideration of every one who is interested in keeping queens out of the surplus apartment of the hive.

Friend Root:—Your kind favor concerning an editorial on page 723 is at hand. I had only just read it, and shall be pleased to give what information I have on the subject.

The sample of zinc through which one of Dr. Miller's queens passed was tested by my steel gauge, and the perforations were found to be smaller than in my zinc, proving beyond question that the queen was not a fully developed one. I am aware that such undeveloped queens can be easily reared in full colonies, and it can be done as follows: Select a time during the season when little or no honey is coming in. Remove the queen from a strong colony and let them rear a queen. The usual number of cells will be started, but, without exception, every one of the young queens will be small or undeveloped—not much if any larger through the thorax than a worker. These queens will also prove short-lived and comparatively unprolific. They are generally superseded the second season. I once reared a lot of queens in the manner described, and had eight of them in one colony in queen-rearing chambers. I soon found that they could all go anywhere through the zinc like the workers, so that all were killed but one. Queens reared by the usual approved methods, or by natural swarming, were always safe in these chambers unless they flew out and entered the wrong place. On one occasion I had 30 of them in one colony. The zinc worked perfectly, and not a single queen passed it.

The trouble was, that the workers would feed only the young queens they had selected for mating, and the rest would not fly out to mate at all; so, out of 30 virgins I got only three or four laying queens.

Again, for many years I have every year had queens above and below my queen-excluders in every colony, and the excluder proves to be a perfect barrier to all queens reared in a proper manner. The conclusion, therefore, is, that, in the few instances where queens pass the excluder zinc, the fault lies not in the zinc but in the method by which the queens were reared. Hence it is important, first of all, that queen-excluder zinc should be of such size that the workers can readily pass, and that it shall in no way prove an obstruction to them.

I send you herewith three samples of queen-excluder zinc. The two-rowed strip has perforations exactly the right size. The perforations may be just a little larger, and work all right, but no smaller. The larger sample with opposite perforations will let many queens that are fairly developed pass it, so that the perforations are too large. The sample one-rowed strip has perforations too small, and yet it is probable that the perforations are only smaller than those in the two-rowed strip by $\frac{1}{5000}$ of an inch. Well, now, the question will arise, "How do you know there is such a small difference?" It is simply by testing it by the steel gauge, and by observing the bees in passing it. The size is not quite large enough to let the bee's head through without a liability of being caught by the top of the head and the tip of the mandibles right in the zinc. I have seen bee after bee caught in this manner, and often it is a minute or two before they can get loose. At first I supposed these queerly acting bees to be trying to gnaw a larger opening; but after a little I observed that they were really fast in the zinc. I then discovered how they got fast thus. It seems that a bee, before trying to pass a narrow crevice, tries first its head by bobbing back and forth. If it passes freely it then goes through at once, otherwise there is sure to be considerable delay, although it can just squeeze through. It appears, then, that the bee's head is longer than the diameter of its thorax, although I have never measured it. Your new zinc, from which Dr. Miller's sample was made, is so small that the worker-bee's thorax can just pass it easily, simply brushing down the hair on its back in passing, but too narrow to let the bee's head pass freely. It is probable that the bees get used to it, and each time in passing thrust forward the mandibles, or turn the head sidewise. However, if the bee is loaded it is very difficult for it to get through, and on this account I believe the perforations should be as large as I make them, and especially so since my zinc has proved so reliable as a queen-excluder.

I also include a sample of my drone-excluder zinc, to show how large the perforations must be to let the largest queens pass freely. I got this size also by careful tests, and it is pronounced perfect by Mrs. Atchley, Mr. Trego, and others who have used it largely, and have got the art of mating queens to select drones to perfection. There seems no longer any need of mating queens in confinement.

New Philadelphia, O. Dr. G. L. Tinker.

[In the light of the above, and in the light of our own experience and that of Dr. Miller's, it becomes evident that it is impossible to make a perforated zinc that will exclude *all* queens. As Dr. Tinker well says, if the queen gets through a zinc it is not the fault of the *metal*, but because such a *queen* is not normally developed. If these small queens are little if any larger than worker bees, so far as the thorax is concerned, and are below the normally prolific point, their heads had better be pinched. That being true, it may be laid down as a rule that, if zinc not exceeding $\frac{170}{1000}$ inch wide does not exclude, it is because the queen is not all that she should be.

We have carefully measured the samples of zinc Dr. Tinker sent, and find that the two-rowed strip referred to by him as being just exactly the right size measures in the width of the perforation $\frac{1695}{10000}$. The larger sample to which he refers, having opposite perforations, and which he says will let many queens that are fairly developed pass through it, has perforations $\frac{1715}{10000}$. This, he says, is too large, and tallies perfectly with our experience. The sample of one-rowed strip that he mentions as having perforations too small, measures $\frac{1693}{10000}$; and as between this and those first mentioned, the reader will see, by comparison of fractions, that there is, in fact, by actual measurement, a difference of $\frac{2}{10000}$—confirming exactly what Dr. Tinker said would be the actual difference.

The next and last size mentioned—that is, the one that will let through normal queens and exclude drones—measures only $\frac{1675}{10000}$. We know that there are some queens that have actually gone through metal that measures only $\frac{1650}{10000}$, and this would leave a difference between the smallest queens and those normally developed, so far as the thorax is concerned, of $\frac{25}{10000}$. As this figure is a little hard to understand, we would say it would approximate very nearly $\frac{1}{32}$ of an inch. Now, perhaps in all this you may think we are splitting hairs pretty fine; but as we happen to possess a very delicate micrometer we might as well speak exactly as to approximate; for *approximate* figures would not show the *difference* between sizes of zinc that are so nearly alike.

Referring to the exactly right size of the perforated zinc, we would say we have experimented also upon this considerably; and we find that zinc $\frac{160}{1000}$ or $\frac{161}{1000}$ is too small; and that, while it will admit workers fairly, without loads, it will exclude them when filled with honey, or, at least, it is a very difficult thing for them to pass through. In our experience we have found no difficulty with zinc as small as $\frac{165}{1000}$, for all purposes in the apiary. Loaded and unloaded workers seem to pass through it quite freely. Now, in view of the fact that there are some small queens, and if it is a fact that the $\frac{165}{1000}$ does not hinder loaded workers, would not this size be nearer the "exactly right size"? Dr. Tinker is one of the "doctors" on the subject of zinc, and we should like to hear from him further in reference to this last point.

It might be well to suggest, however, that his bees are possibly a little larger than the normal Italians, for he has been making a specialty of the Syrio-albinos; and we believe he has had some Carniolans. We know it to be a fact that this latter race is a trifle larger than Italians—just how much larger we do not know. In the mean time we wish to express our thanks to the doctor for his very able article on a subject that has been more or less perplexing in regard to the reason why queens will sometimes get through zinc.

Now, Dr. Miller, it will be in order for you to give a history of that queen which got through perforations only $\frac{165}{1000}$ inch wide.]

HOFFMAN FRAMES.

A SUGGESTED IMPROVEMENT.

Herewith I send you a corner of one of the frames you made me last spring, which, so far as my experience goes, is a complete answer to your note following Dr. Miller's article on page

746. You made me 800 of these frames, and let me say that the material and workmanship of all were as perfect as the specimen sent. I have always used top-tars 1⅛ inches wide and ⅜ thick, with interspace ¼ to $\frac{5}{16}$, and was never troubled much with burr-combs. Such frames were too wide at the end, and unhandy to get hold of. This frame has Hoffman ends, 1⅜ in. wide; top-bar ⅝ thick, $1\frac{1}{16}$ wide, with projection ⅝ square, which gives you a good finger-hold, and, what is important, gives the bees a free passage to the end sections above, directly up the ends of the hive.

Nine frames, when tightly wedged together, measure 12⅛ inches, leaving the interspaces $\frac{3}{32}$ of an inch wide. The aggregate width of frames is reduced ¼ inch by indentation of the corners. This frame is strong, and always keeps its shape. Dr. Miller, I think, is right in the ¼-inch interspace between top-bars; and if it falls only a small fraction below this the bees will close it with propolis, as noticed in the space of $\frac{3}{16}$ between the outside frames and wall of hive. Any unnecessary space that crowds a bee in passing will be closed.

I have used frames ⅞ thick, and am getting rid of them as fast as I can. Bees, in reaching the surplus apartment, don't like to travel too far through dead timber; and in my experience they will commence work sooner over thin top-bars than very thick ones. With a ⅝ top-bar and a full ¼ interspace, my queens, not once this summer, have entered the supers. I have no use for honey-boards, queen-excluders, nor any such fixtures. Five-eighths is thick enough for strength, and will, if the space is only ¼ inch, prevent burr-combs. J. A. SCUDDER.

Washington, Ind., Oct. 14.

[We have given Mr. Scudder's improvements on the Hoffman frame no little thought; and the more we think upon it, the more we appreciate at least one of the changes; and that is, narrowing up the projection or end of the top-bars so as to give more finger-room in handling. This also obviates the trouble of the splitting-off of the edges of the end-bars, and, to a great extent, to stiffen the frames. We would make the change on all of our frames were it not for the great expense. Such frames would cost considerably more. We commend a careful reading of Mr. Scudder's article, and we should be glad to receive suggestions and criticisms.]

STORING UP HEAT FOR FUTURE USE.

Since the world began, I can not find that anybody has, before my time, done any thing worthy of mention in the way of storing up heat for future use—at least, no one has succeeded in saving it in sufficient quantities so as to warm a building 36 hours after the fire that furnished the heat had gone out. If so, I should like to hear from such. Not only are our greenhouses warmed in this way over Sunday, but our dwelling also, 400 feet away from the fire. The heat is stored up in the heated earth under ground, and is carried where it is wanted by means of hot-water pipes. A. I. R.

THE NEW CELERY CULTURE.

Heigh-ho! I have finally succeeded in getting nice crisp celery by the new culture. It is, however, on our exceedingly rich plant-beds, where the ground is nearly half manure. The plants were thinned out to about 7 inches apart, and allowed to grow in the bed. Unless they are about so close, and there is a full stand, the stalks are apt to sprawl around, not compact like those banked up with earth; but when you succeed, the product is nice and the stalks are brittle and of beautiful pearly whiteness, and hardly need washing. A. I. R.

FREEMAN POTATOES.

In answer to a good many questions, I answer that the Freeman is an early potato—say a week of ten days later than the Ohio. The shape is much like the Ohio, only perhaps a little more flat or elongated, although many specimens are round. It has the smoothest eyes of any potato I have ever seen; and it is the cleanest and handsomest potato, I think, I have ever seen. The flesh is white the skin is white, or, rather, straw color In quality it is almost if not quite equal to the Snowflake. Under favorable circumstances the yield is enormous; and if you plant them too far apart they will often grow too large. Notwithstanding, I have never yet seen a prongy Freeman, or one with small potatoes growing on the side of a large one. It is especially suited to the one eye system practiced by Terry. The fact that T. B. Terry plants his whole farm to the Freeman, and nothing else, ought to be a sufficient recommend for it. Ever since the first year of its introduction the crop has been sold out long before planting-time; and thousands of dollars have had to be returned because the orders could not be filled. In view of this, I think it will be well to lay in a stock this fall, before freezing weather renders it unsafe to ship. For prices, see page 802. The small potatoes that we offer at $3.00 a barrel are pronounced by T. B. Terry himself to be genuine Freemans. I mention this because there has been quite a little complaint that the seed received from different sources was not all true. When it was so hard to get hold of Freemans, it would not be very strange if something else by some mistake not to say intentional wrong—were sent out.

Books by T. B. Terry and Others.

The long winter evenings bring extra time for reading. A part of this time could not be more profitably spent than in reading the following rural hand-books which we send by mail at the uniform price of 40c each. The new edition of the A B C of Potato Culture, rewritten this season by T. B. Terry, will be completed in December. For 10c extra we will send at once a copy of the old edition and the new also when finished.

The A B C of Potato Culture. Paper, 220 pages, 4x5, illustrated. This is T. B. Terry's first and most masterly work. The book has had a large sale, and has been reprinted in foreign languages. The second edition, reset and almost entirely rewritten, is just issued. When we are thoroughly conversant with friend Terry's system of raising potatoes, we shall be ready to handle almost any farm crop successfully. Price 40c, postpaid.

The A B C of Strawberry Culture. Paper, 150 pages, fully illustrated. This is Terry's latest *small* book, and has received some very high words of praise. Who among rural people does not have a little garden-patch? If you would learn to raise in it that most luscious of all fruit, the strawberry, with the best results, you can not be without this little book. Even if you don't grow strawberries you will be the better for reading it.

Tile Drainage. By W. I. Chamberlain. This is a valuable companion to our other rural books. It embraces the experience of forty years of one of our foremost practical agriculturists, who has laid with his own hands over 15 miles of tile. Paper, 150 pages, illustrated. Price 40c, postpaid.

Any one of above books sent free for one new subscription with your own renewal and $2.00, the new subscriber to receive GLEANINGS the rest of this year and all of 1894.

Terry's First Large-Sized Book.

We have just received 100 copies of "Our Farming," from Wm. Henry Maule. Price, by mail, postpaid, $2.00. If ordered by express or freight with other goods, you may deduct the postage, 15c.; or we will send the book by mail, postpaid, with GLEANINGS, for $2.50.

A. I. ROOT, Medina, Ohio.

For November Only.

Two Papers for the Price of One.

The *Farm Journal*, of Philadelphia, one of the cleanest, brightest, and most valuable of the agricultural monthlies, has made such favorable clubbing terms that we are able to **Give a Year's Subscription Free** on the following conditions: Send us $1.00 to renew your subscription *before* the time paid for is up. If you are in arrears for GLEANINGS IN BEE CULTURE you must pay up to the end of this year and for a year in advance, when you will be entitled to the *Farm Journal* for a year also. If you secure a new subscription to GLEANINGS, and send $1.00 for the same, you may have the *Farm Journal* a year to pay for your trouble, or you may have it sent to the new subscriber if you wish. All new subscriptions to either paper will receive the rest of this year remaining, after your subscription is received, and all of next year.

This offer is good only for this Month of November.

After this month the club price will be $1.10; and to those who are in arrears for GLEANINGS, the best club price is $1.20, unless all arrears are paid and a year paid in advance. That you may know what others think of the *Farm Journal* we give here a few testimonials from leading agricultural writers and editors as to what they think of it.

What a Practical Connecticut Fruit-grower and Nurseryman thinks of it.

I read the *Farm Journal* because it is bright, pointed, and interesting, from beginning to end, advertisements and all. Life is short—I am busy—and there is often the pith of a column article in a half-inch paragraph in the *Farm Journal*. If I want the paddings and trimmings, I can make them up in my own mind nights and Sundays, when at work or on the wing: *Farm Journal* does not intrude them on me. The whole paper is full of sunshine.
South Glastonbury, Ct. J. H. HALE.

From the Department of Agriculture.

The *Farm Journal* is unique, practical, valuable. There are points sometimes in a single number worth the subscription price for a whole year.
EDWIN WILLITS,
First Assistant Secretary of Agriculture.
Washington, D. C.

Just as Good for California.

I hope you will get the one million subscribers you are trying for. I am sure your paper merits them. It is certainly the best farm paper I have ever seen, as it fairly bristles with suggestions and wrinkles that are most useful in every-day life on the farm.
San Diego Co., Cal. J. JESSOP.

It is Doing a Good Work.

The *Farm Journal* carries to its readers a large amount of helpful information in condensed, available form. It is doing a good work, and I wish it continued success. PROF. W. A. HENRY.
Madison, Wisconsin.

Crisp, Newsy, Never Prosy.

The *Farm Journal* is crisp, newsy, tells much on a page, is up to the times, often in advance, and withal practical. Its contributors are among the best, and never prosy, and one wants to read all the pages first, and each one is the best. This is why I read the *Farm Journal*. JOHN GOULD.
Aurora, Ohio.

Word from Joseph Harris.

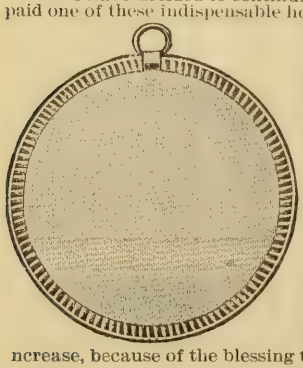
The *Farm Journal* is full of good things. I do not see how any intelligent farmer, gardener, or fruit-grower can help reading it.
Moreton Farm, N. Y. JOSEPH HARRIS.

Yes, I do read the *Farm Journal*. Why? Because it is the cleanest, brightest, and best paper of its class —in my judgment.
E. S. CARMAN, Editor of the *Rural New-Yorker*.
Riverside Park, N. J.

If you wish to judge of its merits yourself, address a request for sample copy either here or to *Farm Journal*, Philadelphia, Pa., and you will receive it promptly. If you want to take advantage of this offer, *do it now*. Remember that a month passes very rapidly, and with it will pass one of the best opportunities of the year. If you are already a reader of the *Farm Journal* you can have your subscription advanced a year on this offer.

AUGITE STOVE-MATS.

We have decided to continue our October premium for another month; that is, we will send free postpaid one of these indispensable household articles, on the same conditions that we send the *Farm Journal* above—as a premium for a new subscription, or to those who pay for a year in advance before the time paid for is up, or who pay all arrears up to the end of this year, and for a year in advance. This offer will positively be withdrawn December 1st. After that date, to get the mat will require 10 cts. extra.



Canvassing time is here again, and many are improving their time and their revenue by selling these stove-mats. It is one of the most ready sellers of any thing that an agent can carry. We furnish them at $1.00 per doz.; 6 doz., $5.50; 12 doz., $10.50; sent at your expense. If sent by mail, the postage is 6c each; 60c per doz. We get 10 gross from the factory every two or three weeks, and rejoice when the sales increase, because of the blessing they bring to every housekeeper who uses them.

A. I. ROOT, = = Medina, Ohio.

Bee-Hives.

Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue 23-22db

W. H. PUTNAM, River Falls, Pierce Co., Wis.

FOR SALE. 500 Ferrets, a well-trained bird-dog, Scotch Collie, and Coon dog puppies. Price list free.

N. A. KNAPP,
ROCHESTER, LORAIN CO., O.

TAKE NOTICE!

BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH,
14tfdb New London, Wis.

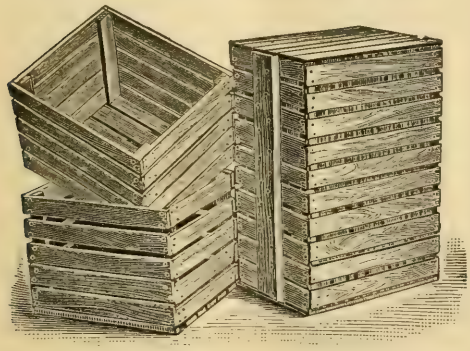
Warranted Golden Queens,

80c; 6 for $4.25; dozen, $8.00; young tested, $1.00 up. Write for prices on select and breeders.
J. B. CASE, Port Orange, Vol. Co., Fla.

BEE-HIVES AND SUPPLIES

Send for catalogue free. Address **SAMUEL JONES,** Highland Park College, Des Moines, Iowa. 1-19db

BUSHEL BOXES.



The above cut shows our new-style *all-slatted bushel box.* We have two other styles; one has slatted bottom and sides with solid ends in three pieces called the *slatted bushel box.* The other has solid ends and close bottom and sides, and is bound with galvanized iron and called the *galvanized bound box.* These boxes were devised by T. B. Terry for handling potatoes, for which purpose nothing could be handier. The potatoes are picked up into the boxes in the field and left in them till sold. Other crops, such as cucumbers, tomatoes, and apples are being handled in these same boxes. They are of such a size that two go crosswise in an ordinary wagon-box. Outside measure is 14¼x16⅞x12½ deep, and they hold a bushel of potatoes level full so they can be piled one upon another. The above cut shows two *all-slatted* boxes nailed up, and a bundle of 15 alongside; 13 of the 15 are in the flat, packed inside the other two, and nails of the proper kinds are included. The *slatted* and *galvanized bound* boxes are put up in the same way, except there are only 12 in a package instead of 15. Each package weighs about 85 to 90 lbs.

PRICE LIST.

All-slatted bushel box, per crate of 15	$1 50
Slatted bushel box, per crate of 12	1 50
Galvanized bound bushel box, per crate of 12	2 10

In lots of ten crates, 5 per cent discount will be deducted. Price each, nailed, 15, 18, and 22 cents, respectively. A 20-page pamphlet called Handling Farm Produce, telling all about these boxes, mailed free on application.

A. I. ROOT, Medina, O.

Is it for Health or Pleasure that You Build Fence?

If neither, then you don't care to do it over right away and should use the *Page Coiled Spring,* which is *permanent.* If well put up, it will last as long as your life.

PAGE WOVEN-WIRE FENCE CO., Adrian, Mich.

☞In responding to this advertisement mention GLEANINGS

HATCH CHICKENS BY STEAM
WITH THE IMPROVED
EXCELSIOR INCUBATOR.

Thousands in Successful Operation. *SIMPLE, PERFECT, and SELF-REGULATING.* **Guaranteed to hatch a larger percentage of fertile eggs, at less cost, than any other Incubator.** Send 6c. for Illus. Catalog. Circulars Free.

GEO. H. STAHL, Pat. & Sole Mfr., Quincy, Ill.

☞In responding to this advertisement mention GLEANINGS

Muth's

Honey-Extractor.

Square Glass Honey-Jars,
Tin Buckets, Bee-hives.
Honey-Sections, &c., &c.
Perfection Cold-Blast Smokers.

APPLY TO
CHAS. F. MUTH & SON, Cincinnati, O.

Send 10-ct. stamp for "Practical Hints to Bee-keepers." Please mention this paper.

Cash for Beeswax!

Will pay 21c per lb. cash, or 24c in trade for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 28c per lb., or 30c for *best selected wax.*

Unless you put your name *on the box,* and notify us by mail of amount sent, I can not hold myself responsible for mistakes. It will not pay as a general thing to send wax by *express.*

A. I. ROOT, Medina, Ohio.

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Special Notices.

MONROE SEEDLING POTATOES.

In another column I said something about purchasing a carload of Monroe Seedling potatoes. They are the nicest lot of potatoes I ever saw, with the exception of the Freemans. In fact, the Monroe Seedling was the potato of Terry's deliberate choice before the Freeman made its appearance. Well, now, if you want these potatoes this fall, we can make you a price on them so you can afford to use them for the table if you do not want them for seed. They are stored in nice new white basswood potato-boxes, and you may have them for $1.00 per bushel, box and all, or $2.50 per barrel of 11 pecks. If you look at the prices of potatoes in the catalog's, you will see that $2.50 per barrel is a low figure for even good eating potatoes; and if you want a nice medium early potato for seed, you can not find any thing better than the Monroe Seedling. If you wish to see a sample of the potatoes, we will send by mail, postpaid, a pound for 15 cents. If you wish to buy a carload, perhaps you had better correspond with Wilbur Fenn, Tallmadge, Summit Co., O., direct. Now, these potatoes were purchased and are to be sold for seed; and if you want to know what seedsmen propose to charge per barrel, just look in any of the seed-catalogues where they have begun to quote potatoes. I do not believe any of them have got a much better potato than the Monroe Seedling; but notice how many dollars per barrel they are charging for them.

WHITE MULTIPLIER ONIONS.

We have finally succeeded in getting a dozen bushels or more of these new white onions. So far as I can learn they are very much like the Potato onions, except that they are white—as handsome, in fact, as the American Pearl onions. They are just as early, and will sell at the same price, and they never send up a seed-stalk—that is, they do not so far as I know. I believe they are usually planted out in September, usually in rows a foot apart and 8 or 10 inches apart in the row. You may remember, however, that a number of the readers of GLEANINGS have suggested that they succeeded better with Potato onions when planted in November than at any other time. I know they are very hardy, because we have had them outdoors all winter for two winters past. Some of them, set out about two weeks ago, have started, and are growing nicely. The prices so far have been very high. Peter Henderson, in his autumn wholesale catalogue, quotes them at $2.50 per peck, or $8.50 per bushel. Surely it ought to pay to grow onions when they bring such prices at wholesale. Well, our price, while our stock lasts, is only $1.00 per peck, or $3.50 per bushel. In smaller quantities the price will be 10 cts. per pt., or 15 cts. per quart. If wanted by mail, add at the rate of 10 cts. per quart for postage and packing. If any of you have White Multipliers or White Potato onions to sell, you might tell us how many you have, and what you want for them; or, if you prefer, I think an advertisement in the pages of GLEANINGS would bring you customers. There seems to be a great call for these kinds of onions, as well as for onion-sets; and I think we can help each other by comparing notes and making an interchange.

GAULT'S PERPETUAL RASPBERRY.

Since what I have said in regard to the stock being sold out, friend Gault informs me that one lot of plants that he had sold is likely to be thrown back on his hands and he promised them to me to use as premiums for subscriptions to GLEANINGS; therefore I make the following offer: For 2 new subscriptions to our journal, GLEANINGS IN BEE CULTURE, I will present to the getter-up of the club one of Gault's Perpetual raspberry-plants; the same for 4 old subscribers or renewals; or we will send the raspberry-plant, and give a subscription to GLEANINGS for one year, for $1.50. Plants will be sent by mail, postpaid, next spring, any time when you get ready for them.

Wants or Exchange Department.

WANTED.—To exchange a Pelham foundation-mill, dipping-tank, water-tank, and dipping-boards, for nice extracted white-clover honey.
J. Q. A. HAUGHEY,
202 Washington St., Battle Creek, Mich.

WANTED.—Extracted honey in exchange for "Our Domestic" Clothes-drier. See ad., p. 803, Nov. 1st GLEANINGS. D. S. HALL, So. Cabot, Vt.

TO exchange.—Bicycles, 56 inch Champion, 52-in. Eagle. Will exchange either for 120 lbs. of good extracted honey. Send sample. Also several good safeties to exchange. J. A. GREEN, Ottawa, Ill.

WANTED.—To exchange for honey or offers, Toulouse geese, English dorkins, Scotch collies, and ferrets. Fine stock. WYNN SMITH,
Lock Box 235, Aurora, Ill.

WANTED.—To exchange 38 colonies, mostly Italians in fine condition, in L. hives, for a young mare, or pure-bred poultry, at $3.00 per colony for the lot, or $3.50 each. WM. CASWELL,
22-23 Sacramento, Cal.

WANTED.—To exchange a good 4x5 photographic outfit, cost $20, for Odell typewriter.
22-23d RESPESS ENGLISH, Englishville, Ga.

WANTED.—Partner, in apiary and queen-rearing business; some capital needed; must thoroughly understand the business, and must be willing to pitch in and help make the business *go*. I must be absent most of the summer. Address
O. S. DAVIS, Selma, Cal.
P. S.—If you don't mean business, don't write.

WANTED.—To exchange for extracted honey, 1 Stanley 4-frame automatic extractor, two Vandervort foundation-mills, one 10-in. and one 6-in., nearly new; 8 horse-power engine, one-piece section-machine, one No. 6 Appleton feed-grinder, 25-ft. 8-in. rubber belt, new; 1 Badger corn-sheller, 2 hole, 50 bu. per hour, hand or power, new, 1 large crank pipe threading machine, cuts from ¼ to 2 in. pipe, good as new. A. D. WOOD,
811 Mich. Ave., E., Lansing, Mich.

DOVETAILED HIVES, SIMPLICITY HIVES,
SECTIONS, EXTRACTORS, ETC.
FULL LINE OF
BEE-KEEPERS' SUPPLIES.
60-PAGE CATALOGUE. 1tfdb
J. M. JENKINS, WETUMPKA, ALABAMA.
☞In responding to this advertisement mention GLEANINGS.

HONEY COLUMN.

CITY MARKETS.

CHICAGO.—*Honey.*—Comb honey that grades as choice white continues to sell at 15c per lb. For ordinary grades of white honey 14c is the prevailing price where the combs are not well filled or where they are discolored by travel-stains. Sales have been quite good up to this time so that our stock at present is light. The receipts, however, are equal to the demand. Some lots are coming to market the frames of which have been partly filled last year and finished this season. They do not sell at over 13c per lb., and it is difficult to find a purchaser for this class of honey when there is plenty of white goods to select from, the price not being high for any fine honey. Extracted continues to sell in a slow way at from five, six and seven, cents per lb., according to the body, flavor, color, etc. Beeswax, 22c per lb.

We do not consider that there is any probability of an advance in price for some time, stocks at producing points being quite large.

R. A. BURNETT & Co.,
Nov. 7. 161 So. Water St., Chicago, Ill.

NEW YORK.—*Honey.*—The market on white honey is weak, and shows no activity. The arrivals are large and the demand very light; hence prices have a downward tendency and concessions have to be made to effect sales. We quote: Fancy white 1-lb., 14; 2-lb., 12; fair white, 1-lb. 12; 2-lb. 11. Buckwheat is not plentiful, and finds ready sale at 11@12 for 1-lb., and 10 for 2-lbs. Extracted, no change since last report. Plenty of supply of all kinds, and limited demand. We quote: White clover and basswood, 6@6½; California, 5¾@6; Southern, 55@65c per gallon. Beeswax, doing a little better, 24@25.

HILDRETH BROS. & SEGELKEN,
Nov. 7. New York.

ALBANY.—*Honey.*—There is an ample supply of clover honey in both small and large sections, but buckwheat continues scarce. We quote white clover, 13@15; mixed, 12@13: buckwheat, 11@12. Extracted begins to move more freely at 5½@7 according to quality. Receipts up to date, 2255 cases comb and 54 packages extracted.

Nov. 10. CHAS. MCCULLOCH & Co.,
393, 395, 397 Broadway, Albany, N. Y.

KANSAS CITY.—*Honey.*—The weather continues warm, consequently the demand is not as good as if the weather were cooler. We quote: No. 1, white comb, 15@16; No. 2, 13@14; amber, No. 1, 14@15; No. 2, 10@12; extracted white, 6¾@7; amber, 5@6. Beeswax, 20@22. CLEMONS, MASON & Co.,
Nov. 8. Kansas City, Mo.

CHICAGO.—*Honey.*—The limited demand for comb honey does not permit our quoting it above 15c, with no sales of white selling below 14@14½. The stock that we have received this year is of fine quality, and we advise forwarding to market at once, so as to be received here before the cold weather sets in. Extracted is selling at 6@6½. Beeswax, 23. S. T. FISH & Co.,
Nov. 8. 189 South Water St., Chicago, Ill.

BUFFALO.—*Honey.*—The demand is very easy on our market. At present, a little fancy selling 14@15; choice, 12@13; buckwheat, 8@9; beeswax, 25@28. We still look for an improvement in the honey market; no doubt Buffalo will be able to handle it to as good advantage as any market you can ship it to. BATTERSON & Co.,
Nov. 7. Buffalo, N. Y

ALBANY.—*Honey.*—Market not so firm, and tendency of prices lower, especially on the better grades. Prices of clover, 14@15; mixed, 12@13; but to make ready sales, concessions from these prices have to be made. Buckwheat comb wanted, 11@12; extracted clover, 7@7½; mixed, 5½@6; buckwheat, 5@5½. H. R. WRIGHT,
Nov. 6. 326, 328, & 330 Broadway, Albany, N. Y.

KANSAS CITY.—*Honey.*—Stock of comb honey good. Demand fair. We quote: fancy, white, 15; No. 1 white, 14; fancy amber, 13; No. 1, dark, 11. Extracted, white, 7; amber, 6½; dark, 5.

HAMBLIN & BEARSS,
Nov. 8. Kansas City, Mo.

DETROIT.—*Honey.*—Best white-comb honey sells readily at 15; other grades, 12@14. Extracted, 7@8; beeswax, 24@25. M. H. HUNT,
Nov. 8. Bell Branch, Mich.

CLEVELAND.—*Honey.*—No. 1 white honey in good demand, selling to-day 16@17. No. 2, 14@15. Extracted has rather slow sale at 8c.

WILLIAMS BROS.,
Nov. 7. 80 & 82 Broadway, Cleveland, O.

ST. LOUIS.—*Honey.*—We quote: Snow-white comb, 16; water-white, 15; light amber, 14; amber, 12½. Extracted, in cases, 6@7; in barrels, 4@4½. Beeswax, prime, 21. D. G. TUTT GROCER Co.,
Nov. 8. St. Louis, Mo.

FOR SALE.—34,000 lbs. honey. I have a choice lot of buckwheat honey; price 6c per lb.; basswood, 7½c, f. o. b.; 200-lb. kegs. Sample on application.
W. L. COGGSHALL, West Groton, N. Y.

FOR SALE.—1000 lbs. extracted honey in 60-lb. square cans, price 7c per lb., or will exchange for bee-keepers' supplies. Sample sent on application.
W. D. BUNTING, Uvalde, Texas.

FOR SALE.—3 barrels of fine heart's-ease extracted honey. JNO. A. THORNTON, Lima, Adams Co., Ill.

FOR SALE.—60-lb. cans of extracted honey (fall flowers) at $5.00 per can. Address
ED. W. COLE, Kenton, Ohio.

FOR SALE.—2000 lbs. of fine comb honey, in 1-lb. sections, 24-lb. cases, and 2000 lbs. of clover and basswood honey, in 60-lb. square jacket cans. Sample of extracted honey by mail on application.
EZRA BAER, Dixon, Illinois.

BUFFALO, N. Y. Unsurpassed Honey Market. BATTERSON & CO. Responsible, Reliable, Commission Merchants. 18tfdb **and Prompt.**

CHAS. ISRAEL & BROS., 110 Hudson St., N. Y.
WHOLESALE DEALERS & COMMISSION MERCHANTS. *Honey & Beeswax.*
Established 1875.

WANTED. — BEESWAX. — Will pay highest cash price for same.
I. J. STRINGHAM, 105 Park Place, N. Y city.

FLORIDA. For sale, 75 hives of bees; inquire of AUG. LEYVRAZ, Francis, Fla. 19tf

White SHIPPING-CASES.
To have your honey sell well, use our beautiful cases, 12 and 24 pound sizes. Send for illustrated catalogue of every thing needed in the apiary.
M. H. HUNT, Bell Branch, Mich.

Californians, Attention!
I will furnish you with snow-white No. 1 sections at $3.00, and No. 1 cream at $2.50 per M. These prices are for orders received in November. Orders received in Dec. and Jan., 25 cts. per M. more. Cases to hold 24 lbs., one-piece covers, 12 cts.; three-piece covers, 10 cts. Goods delivered at Acton, Los Angeles Co., Cal., at these prices; expect to ship in Jan. or Feb. Cash with all orders. Orders in Nov. and Dec. to be sent to 1901 N. Mill St., Kansas City, Kansas, afterward to 356 Cypress St., Pasadena, Cal. Reference, R. E. Nichol, Agent, Acton.
F. J. FARR.

FOR SALE. Apiary outfit: Extractor, Smokers, extra frames, etc., and 40 colonies of bees in 2-story Simplicity and Dovetailed hives, in best of shape for wintering, for $100.00.
C. P. COFFIN, PONTOTOC, MISS.

$5.50 For 3, or $10.00 for 6, Finest Brown Leghorns, or Plymouth Rocks. Other varieties. Circular free. Address GEER BROS., St. Marys, Mo., or H. B. GEER, Nashville, Tenn.

THE REVIEW FOR 1894.

As the occasion demands, the ***Special Topic*** feature, that of bringing together in one issue the latest views of the best men upon some one topic, will be continued. In the ***Extracted Department*** will be given the most valuable articles to be found in the other journals. ***Hasty*** will continue to give, each month, about three pages of his inimitable "Condensed View of Current Bee Writings." R. L. Taylor will write each month under the head of "***Work at Michigan's Experiment Apiary.***" Next summer, in company with his camera, the editor expects to visit a large number of bee-keepers, making extended trips through Canada, the Eastern, Middle, and Western States; and the ***Review*** will contain ***Illustrations*** and descriptions of the bee-keepers visited, their homes, families, apiaries, implements, methods, etc. The principal ***Correspondents*** are successful, practical men, most of whom have numbered their colonies by the hundred, and sent honey to market by the ton, and who can write, from experience, articles containing information of real benefit to honey-producers. In short, the ***Review*** will strive most earnestly to stand in the ***Front Rank,*** to publish advanced ideas, to be interesting, enterprising, wide awake, up with the times, and of such a character that no practical bee-keeper can afford to do without it. Price $1.00 a year. The ***Review*** and "***Advanced Bee Culture***" (a 10-cent book) for $1.25. New subscribers will receive balance of this year free. Three late but different issues of the ***Review*** for 10 cents.

W. Z. HUTCHINSON, Flint, Mich.

FREE A Whole Year's Subscription

TO THE WEEKLY "AMERICAN BEE JOURNAL."

For the Full Particulars of this Liberal Offer of America's Oldest, Largest and Best Bee-Paper,

SEND AT ONCE FOR A FREE SAMPLE COPY.

Address, **GEORGE W. YORK & CO., 56 Fifth Ave., CHICAGO, ILL.**

☞ **To New Subscribers, the remainder of this year will be sent free.**

PORTER BEE ESCAPES are used and pronounced a great labor-saving implement by **Chas. Dadant & Son, Prof. A. J. Cook, Chas. F. Muth, Jno. S. Reese, J. H. Martin, John Andrews, F. A. Gemmell, Wm. McEvoy, A. F. Brown, Thomas Pierce,** and many other prominent bee-keepers. Descriptive circular and testimonials mailed free. **PRICES:**—Each, post-paid, with directions, 20c.; per doz., $2.25. *Return them and get your money back after trial if not satisfied.* For sale by dealers. Address **R. & E. C. PORTER LEWISTOWN, ILL.**

Twelve Months.

The Canadian Bee Journal, a live bee-paper, edited by R. Holtermann, will be sent to any new subscriber (*for 30 days only*) for twelve months for 50 cents. Renewals $1.00 per year; stamps or silver. Address GOOLD, SHAPLEY & MUIR CO., Ltd., Brantford, Canada.

50 Cents.

PATENT WIRED COMB FOUNDATION

Has No Sag in Brood-frames.

Thin Flat-Bottom Foundation

Has no Fishbone in the Surplus Honey.

Being the cleanest, it is usually worked the quickest of any foundation made.

J. VAN DEUSEN & SONS,

Sole Manufacturers, Sprout Brook, Montgomery Co., N. Y.

Jennie Atchley's

is the place to arrange for your queens for 1894. She will have them ready.

Beeville, Texas.

BBB'S!

If you keep ***BEES,*** subscribe for the **Progressive Bee-keeper,** a journal devoted to Bees, Honey, and kindred industries. ***50 cts. per year.*** Sample copy, also a beautifully illustrated catalogue of Bee-keepers' supplies, FREE. Address

LEAHY MFG. CO., HIGGINSVILLE, MO.

☞ In responding to this advertisement mention GLEANINGS.

Notice to Jobbers

G. B. Lewis Co., Watertown, Wis.,

Invite all Wholesalers and Jobbers of Bee-Keepers' Supplies to write them for contracts for Hives and Sections the coming season. . . .

1tfdb Please mention this paper.

BIG DISCOUNT on Foundation and Sections. Thin foundation, 50 cts. per lb.; brood, 40 cts. No. 1 sections, $2.75 per M. Every thing cheap, price list free. E. H. TRUMPER, Bankers, Mich.

To Get Acquainted,

We will send the **Bee-keepers' Enterprise** from now until Jan., '95 (16 months), for 50 c.; or 3 months for 15 cts. You will be pleased with your investment, in either case.

Burton L. Sage,

New Haven, = = Conn.

☞ In responding to this advertisement mention GLEANINGS.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
PUBLISHED BY A. I. ROOT
$1.00 PER YEAR MEDINA OHIO

Vol. XXI. NOV. 15, 1893. No. 22.

STRAY STRAWS

FROM DR. C. C. MILLER.

SEALED COVERS seem to have their fate sealed.

MAKE A NOTE of that plan of uniting colonies on different stands given by Doolittle on page 806. It's capital.

ONE-CENT POSTAGE is having some discussion. I'd rather go back to the old three-cent rate, and have free rural delivery.

PRESIDENT WHITCOMB and Secretary Stilson, of Nebraska State Association, are making a push to have an experimental apiary at the State University.

THE BICYCLE is proving quite a benefit to me. It is stirring up public opinion as to the necessity of having good roads. Bad roads are expensive things.

THE RELATIONS between the two editors sitting on one chair at the Chicago convention may never be "strained," but I thought the chair seemed a little strained.

YOUR BEES are ahead of mine, friend Root. Mine wouldn't be so well off in winter quarters yet (in the cellar), for these first days of November are almost like summer.

IF A. I. ROOT should see the springs about my old home among the mountains of Western Pennsylvania, some of them coming right out of the side of the rocks, you couldn't get him away from them.

LOOK HERE, friend Root, what are you going to be up to next? hauling last week's heat 400 ft. and using it over Sunday! Next you'll be sealing up condensed heat in tin cans, and shipping it to the North Pole.

AFTER READING a late number of *Api* I supposed myself dead and buried. An editorial in last GLEANINGS shows I was only shot at and missed—shows what my imagination will do when I'm in a dangerous place.

HONEY is slowly working its way into the market quotations as an article of commerce. Yet many papers even now quote beeswax and not honey, seeming to think that beeswax is still a more extensive commodity than honey.

FRIEND ROOT, you ask if wheels all steel can't be made as light as wood. Of course, they can, just like the wheels of bicycles and little boys' express wagons. I think sulky-wheels are now made that way. Why not wheels for heavy wagons?

THOSE TEN THOUSANDTHS of an inch, on p. 830, remind me of a little discussion in Chicago, where some objection was made to going into too fine measurements. Got to have them, brethren, if our experiment stations are good for any thing.

WASHDAY has much of its terrors taken away if the work can be done without rubbing. Nearly all the rubbing can be saved by the use of kerosene. Farther on you'll learn how. Some succeed, some fail. Perhaps those who fail don't implicitly follow directions.

THAT PLAN of having two nuclei in a hive is good—saves heat. But why "draw out the division-board and let the nuclei unite" in the fall? They seem to winter just the same with the division-board left in. I've tried it lots of times. Then you have another queen in the spring.

IGNORANCE as to bees gives way very slowly. Even so intelligent and reliable a paper as the *Rural New-Yorker* seems to think there should be no laws against spraying fruit-trees in bloom, but that the owners should be compelled "to keep his bees at home by providing bee-pastures there"!

I KNOW the answer to that tin-cup conundrum on p. 825, friend Root. The tin cup at the town pump in Marengo is never stolen. The bottom is punched full of small holes. The cup is of good size, and you get all the drink you want before it leaks out. But it isn't worth stealing.

GUENTHER, the well-known German authority, says, in *Centralblatt*, that queens fertilized in his locality before the middle of May were not prolific or long-lived, while those fertilized so late that they did not lay till the next spring were eminently satisfactory. He thinks the usefulness of drones is not impaired by age.

JAS. R. BELLAMY, in *A. B. J.*, says he has had colonies with 8 frames of brood full from April to August, yet not strong in bees, while others with the same amount of brood would have three times the bees and honey. He thinks the difference was caused by the longer lives of the bees in the second case. If he is correct it would pay to breed for longevity.

I DON'T KNOW exactly what to make of that editorial on page 828 about the large "area for gaining a subsistence without resorting to apiculture." Does that mean that a man will resort to apiculture only when crowded out of all other means for gaining a subsistence, or does it mean that, as population increases and civilization advances, a greater number will resort to the more refined and elevating pursuit of apiculture?

EUCALYPTUS HONEY is a bone of contention between Australia and the mother-country. Londoners say it is valuable on account of its

medicinal qualities, but can never gain a market in England for table use on account of its strong flavor. Australians defend their eucalyptus as of best quality, and say that Englanders want pure sweet without flavor. Education of taste may have much to do with it.

No LICENSE has prevailed in Marengo for 30 years. One of the largest stove-factories has been moved here, turning out two carloads of stoves a day; and with the influx of factory hands the "wets" thought their time had come, and managed to have an election on the one question alone, "Yes" or "No" for license. A remarkably full vote showed 3 to 2 for no license. No license was a main reason for locating the factory here.

HOW TO WASH CLOTHES. Fill a boiler two-thirds full of soft water. Shave into it 1 lb. soap. When it comes to a *boil*, add 4 tablespoons kerosene. Mix thoroughly. Save out about one-third for the second boiler of clothes. Put dirty clothes in cold water and wring out without rubbing. Put clothes into the boiler and boil 15 or 20 minutes. Take out, and put into tub of cold soft water previously blued. Much soiled parts may need a little rubbing. Wring out and rinse thoroughly.

DOOLITTLE ANSWERS QUESTIONS.

HOW TO STRAIGHTEN BROOD-COMBS; UPWARD VENTILATION; WAX AND PROPOLIS.

I am requested to reply through GLEANINGS to the following questions, which I will do with the editor's permission.

1. "What is the best course to pursue with brood-combs that are buckled or bent, so that some of the cells are not deep enough for breeding? Is there any way of bringing them straight? The foundation became bent before the bees built up the comb."

There was a neglect on the part of some one in having the foundation bent when it was given to the bees, or in giving it at such times that the bees did not commence work on it at once, before it had a chance to warp or twist about in the hive. It is best to give brood foundation to bees only at such times as they are wanting more combs; for unless they do so want, they will not be touched by the bees, unless, perchance, to mutilate them, because they have nothing to do except mischief. But, having combs as described, there are two ways of fixing them fit for use by the bees. The first is, by melting them up and working over into foundation again—a plan recommended by some of our most advanced bee-keepers, but a wasteful plan, as I consider it, unless the combs are too crooked; and, secondly, straightening them in the spring of the year when pretty much free from brood or honey. Take them from the hive to a warm room—one whose temperature is up to 90 or 100°, and, when thus warm and pliable, lay on a flat surface and press them in conformity to that surface, cutting out a little strip of comb if necessary, where the worst bulged, so that the combs will come straight without spoiling too many cells by pressing them out of shape. Years ago I straightened hundreds of combs in this way, before foundation was known, so that the combs in all of my hives were as straight as a board.

2. "Is there any way to get bees to build comb when they are disinclined to do so? I fed some colonies until all the vacant comb was filled, but they would not build out the foundation. This has reference to the brood-combs exclusively."

I do not see why you failed here, unless your foundation was adulterated; for, in all my experience in feeding, the bees would work foundation as soon as they began to secrete wax to lengthen out the cells or cap over the feed; but had the bees been persistent in using the combs in the hive rather than work out the foundation, you could have made them work it by taking their combs away from them and giving nothing but foundation. In this case they would have to work the foundation in order to find a place to store the feed, after they had their honey-sacs well filled.

3. "What is your remedy where bees ball a queen? Why do bees ball a queen of their own raising, after all queen-cells have been destroyed, and they can have no hope of any other queen?"

The last part of this is a mystery that I never could really solve. It is easy to say that, in opening hives, the bees fear that their queen is to be injured, so ball her for safe keeping; but I have known scores of instances where a virgin queen has been balled in coming home after meeting the drone, and at other times, till they were killed, or nearly spoiled for future use, being led to the discovery that the queen was being balled by the general appearance of the colony at the entrance, such as an unusual commotion denoting queenlessness, or doubled-up bees having the appearance of being stung. Who can tell us why such balling occurs? The remedy is the same as in introducing queens—that of caging them till the bees behave themselves and are peaceably inclined toward them. Smoke the bees till they release the queen, then cage her and leave her till the bees pay no more attention to the cage than they do to any other part of the hive. When you find this to be the case it is always safe to let any queen out.

4. "Do you believe that bees know better than we what is best for them? If it is best for them to have upward ventilation, do you not suppose they would provide therefor instead of sealing every thing up tight?"

I have my doubts whether bees know what they want along this line, but accept the surroundings as they find them. It is their nature to seal up all cracks and holes not large enough for their exit or return, and this they will do, no matter whether in a tree or hive; but after seeing them prosperous in trees that had only a hole large or small at the bottom of their combs, and all the way from there to a crack large enough to put your hand in the whole length their combs occupied in the tree, I have concluded that they accepted things as they found them, as said above, without asking whether such were best for them or not.

5. "To what extent can bees be induced to work over wax? Do you not suppose wax could be incorporated with thick sugar syrup in some way so that the bees would work it the second time?"

There has been considerable experimenting along the line of having old wax worked over by the bees, such as shaving it up in syrup, etc., but I believe it has been acknowledged, by all who have tried it, to be a waste of time and wax, when compared with having the wax made into foundation.

6. "What is the difference, chemically, between beeswax and propolis? Is propolis a special product of the bee, as wax is? Do bees consume any thing to produce propolis?"

Beeswax is a fatty substance peculiar to the bee, and produced by the consumption of honey, on a plan similar to animals, such as the hog and cow consuming grains of various kinds to produce lard and tallow, the same being of a fatty nature, but differing from beeswax to a considerable extent. Who can tell us more on

this subject? Regarding propolis, bees do not produce it at all, but simply gather it from the resinous exudations of certain plants or trees, and from old hives, etc., where it has been previously placed by other bees. The tree known as the balm-of-gilead, and the horse-chestnut, give the most of the propolis gathered here, the buds being well covered with this resin during the preater part of the summer season.

Borodino, N. Y. G. M. DOOLITTLE.

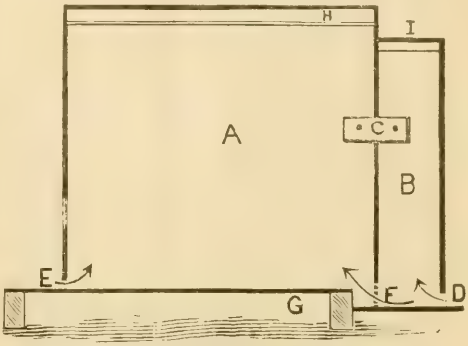
TWO QUEENS TO ONE COLONY.

HOW TO MAKE A SUCCESS OF IT; AN INGENIOUS WAY OF REARING QUEENS.

In GLEANINGS for Sept. 15, we have an article from Mr. B. Taylor, Forestville, Minn., in which he informs us that he is working on a system of manipulation to prevent swarming. He then proceeds to condemn the Langdon device, and tell us of his "more excellent way." He tells us that he keeps two queens in the same hive, separated by wire gauze, the bees accepting both queens, etc. Now comes the claim that this is his discovery, and that he will keep himself protected legally in its use, etc. Now, the brother is simply misinformed. There are other bee-keepers who have made the same discovery, and have been making use of it for some time—myself for one. I keep two queens in every colony, from early spring until I go into winter quarters—not, however, for the same purpose that Mr. T. does, but for various other purposes; and in place of wire gauze I use zinc with front and rear entrances. I will send you a sketch of my device, with explanations, etc.

Now, Mr. Root, we can't afford to allow one man to grab more than belongs to him without entering our protest, even if, as he tells us, he is inspired by a higher motive. The fact that two or more queens can be kept in the same hive, separated from each other, and that the bees will accept them all, has been known for some time; and for one man to claim it as his discovery, and send legal notice on us to "keep off the grass," is just a little too thin. I will just say that I am not working on a non-swarmer—don't want one, as I have never been troubled with too much swarming; but I hope that Mr. Taylor may succeed with his machine so that others who need them may have them; neither do I object to his patent on his hive or device—that is all right enough, but to his intended monopoly of using two or more queens in one colony, which would work a hardship on others that he has no right to inflict.

My device for queen-rearing, etc., consists of a comb-basket attached to the rear of the hive, holding two or more frames crosswise of the main hive, and same size as in the main hive, with rear entrance to basket, and fastened by a cleat on each side screwed to both hive and basket. You will see by the sketch that the main hive is drawn back over the bottom-board an inch, so the bees can go down over the bottom-board to the bottom-board of the comb-basket, then through a strip of perforated zinc into the comb-basket, and out at the rear entrance. This keeps the queens apart while the workers pass back and forth, using both entrances at will. The sides and bottom of the comb-basket are made to project under the back of the hive, to fill up all the space, the comb-basket having two sides, with back end and permanent bottom-board and entrance. This gives you an idea of its construction. It does away with making nuclei in queen-rearing, as every hive is a nucleus, and every nucleus has a full colony to back it, the colony going on with the work in the super. At the same time, it does away with introducing queens in requeening, as they are already introduced. The young queen is reared, and fertilized from the comb-basket, and remains there until sold or used. It rushes brood-rearing by



H, I, cover; C, cleat; D, F, doors, showing end of zinc strip, E, entrance; dots show end of zinc strip. A, side view of main hive with comb basket.

MITCHELL'S QUEEN-REARING COMB-BASKET.

trading combs of brood for empty ones as needed. You have at all times an extra queen for each hive, so if one fails all you have to do is to take your young queen out of the basket, comb and all, and set it in the main hive, and while you can change queens back and forth at will. If you take the queen from the basket the bees will very readily raise another, provided they have the larvæ in the basket to make one of. The zinc strip should run entirely through from side to side of basket, and should be 1½ inches wide, so the basket sits that much lower than the main hive. I use Root's $\frac{165}{1000}$ zinc, as I think it is just right. While it lets the workers through all right, not more than one queen in a hundred gets through.

This gives you an idea of the principle of the device, so any one wanting to try it can vary it to suit. My hives are square, so I use it on the back. It could be used on the side with entrance on back end. I should like others to try it, and report. There is no patent or "higher motive" about it. A. C. MITCHELL.

Enfield, Ill., Oct. 13.

[Friend M., you are just a "leetle" bit hard on Mr. Taylor. If you could but be acquainted with him you would know that he is not selfish or grasping, whatever his published statements might indicate. We do not understand that he claims the idea of two queens in a hive except in combination with the non-swarming idea. Whether he is original in this remains to be proven.

Regarding your queen-rearing basket we believe you have a good and practicable device for certain seasons of the year. It is not original with you probably, because both Dr. Tinker and G. M. Doolittle have been working along these lines. Both of their plans are described in detail in their books, published some three years ago. Rearing a queen in connection with a full colony already having a laying queen, if we may judge from reports, has not proven to be an entire success. They were too liable to be killed by the same bees that were too loyal to their old queen-mother. When honey is coming freely, bees will tolerate conditions not allowed during a dearth, and hence sometimes plans will work when at others they will not. We should like to hear, not only from

friend Mitchell, but Doolittle and Tinker on this question.

Hello! here is another article on the subject, from J. A. Golden.]

KEEPING TWO QUEENS IN ONE HIVE.

HOW THEY MAY ENSURE A LARGE CROP OF HONEY.

Friend Root:—I see by GLEANINGS of Sept. 15 that B. Taylor is claiming for himself a new discovery — namely, a process in which two queens are kept permanently in one hive, and their progeny work promiscuously in all the apartments of the same. Now, please allow me to call to your mind a period some three or four years ago when I wrote an article for your journal, on my experiment relating to the same process and manipulation, but which, for some reason, was not published. I supposed it was some old project tested before I went into the bee business, and was found to be impracticable; notwithstanding, had the honey-flow continued I should have proved, to my own satisfaction at least, that it is the greatest honey-producing theory of any that I know. I think I stated in that article, that every thing was working harmoniously—bees were crowding the surplus arrangement, and had fairly commenced the storing of surplus, when suddenly the honey-flow stopped, and drones were driven from the hives, surplus crates taken from the hives, and I thought I would try the experiment the following season; but as circumstances and reverses to some extent prevented, the experiment was conducted in the house-apiary. The following winter I had made several ten-frame dovetailed hives with two entrances, for outdoor use the following season; but as my bees were suffering from paralysis, I still abandoned the experiment until this fall, when I have been and am now doubling up my stocks in proper order to put in operation next season, should I be permitted to live, and if my bees get through the winter safely. I am pretty certain that I stated my plan of operation in my article, but will state it again here, as follows:

I build up a strong colony. A wire-cloth division-board is placed in the center, and a queen is introduced to the queenless side, after which a queen-excluding zinc division-board takes the place of the wire cloth. Queen-excluding zinc is placed over the brood-combs, and a surplus arrangement is put on, the same as for single colonies; and by using the house-apiary with troughs in place of hives, one can manipulate and use as many queens as he wishes in the combined arrangement, all workers having access to all apartments, with no fears of molestation. My experiment was very convincing to my mind, so far as tested, that the plan would be profitable so far as surplus honey was concerned; but I have some doubts as to the non-swarming idea, for I think that, when bees take a notion to swarm, they are *going to have their way* about it; and all we can do to prevent only causes the bees to become dumpish, sullen, and habitual loafers. As for me, I *want* my bees to swarm, and I will continue to manipulate them in the same home with profit, which I expect to make known to all bee-keepers next year, free of any patent.

Now, if friend Taylor commenced his experiment prior to my article to GLEANINGS four years ago this past season, then he has the right, as being first to discover the aforesaid practical manipulating, so far as I know; if not, then I claim the title he lays claim to, and freely donate the right to all bee-keepers to use, if desirable, without any legal restrictions whatever; and in conclusion I voice friend Taylor's views as to the house-apiary, for it is a source of pleasure as well as a safe repository, in all branches of apiculture. J. A. GOLDEN.

Reinersville, O., Oct. 16.

[This is a very practical question, and we should be glad to receive contributions from a large number who have had experience along these lines.]

CALIFORNIA.

ANSWERS TO MR. PRYAL; SOUTHERN VERSUS NORTHERN PART OF THE STATE.

I notice on page 781 that your correspondent from North Temescal, Mr. Pryal, gives us some valuable information about California; but, like every writer and talker who lives near San Francisco, he allows his vision to extend but a little beyond the northern portion of the State, and gives that part below the Tehachapi Mountains a short shrift. The persistent ignoring of the capabilities and resources of our portion of the State by our northern friends leads some of our people to talk quite strongly of State division, and with a desire to see Southern California stand upon its own unrivaled merits. The Rambler is, however, not a State divisionist, but would rather cultivate harmonious feelings, and try to educate our erring brethren of the North into the fact that we have quite a fine country down this way.

In writing about orange-growing we are aware that there are localities in the northern portion of the State where they can be grown; but the area planted is like garden-patches beside our miles and miles of orchards; and where, in the northern counties, two or three or more towns join to load a car, Riverside alone has this year shipped over 2000 carloads, while other towns have shipped their hundreds of carloads. When you realize the acreage of trees required to produce the above amount of oranges you can realize something of the value of the orange-blossom for honey. During its bloom the bees work upon it with as much vigor as they do upon the basswood in the East. The orchards being under irrigation, there is something of a yield every year; and when the irrigational and atmospheric conditions are just right, the yield is indeed bounteous; and, instead of building up the colonies for a future work, the orange honey is nearly all surplus, for they have been made strong in brood from alfilaree and other honey-producing plants. Several bee-keepers around Riverside, recognizing the value of the orange-blossom for honey, locate their apiaries in or near the orchard districts; and, after securing a bountiful flow therefrom, move their bees a few miles to the foot-hills, and get the benefits from a great acreage of sage. In this move the bees are interrupted only a few hours, and it seems to make no difference to the bees how abrupt the change may be; they continue just as vigorous work if they can find the sage-flowers laden with nectar.

It is very true, that eastern people are imposed upon in the quality of honey that is sold to them. The dealer is just as liable to sell the orange honey under the name of sage, and sage for orange honey, as any way. While orange honey is a trifle darker than pure sage, it is very easy to sell them both under the same name. I think it is the same with the various grades of honey, both east and west. The dealer is always ready to sell what is called for, even if he has to substitute another kind. It is possible that, when the thousands of acres of

young orange-trees that have been planted within the past three years, and are now being planted, get into bearing, there may be such a great preponderance of orange honey from this portion of the State that it will all be sold for orange honey. Our friend P. doubted at first that the beans of Ventura produced a surplus of honey; but he finally had to believe it; and it will turn out the same, we predict, with the orange.

I wish also to say a word in defense of the editor of GLEANINGS, where he states that barley hay is the California staple; and I would state that he is just as near right as our friend of the North; for barley hay is certainly the staple all through Southern California; and during my two years' residence here I have not seen a bale of oats upon the market. Barley is sown here upon the dry lands, just before or at the commencement of the rainy season. If the rains are abundant, the barley crop will be good. Alfalfa, as the irrigation area is extended, is becoming more and more a competitor of barley; but as it is cut just before bloom it is of little value to the bee-keeper.

I have several other bones to pick with our friend in relation to our cherry and apple localities, which can not be excelled. Even our Spanish bayonets are not of the scrubby kind he is familiar with in the foggy atmosphere that surrounds the bay where he lives. We bee-keepers invite our friend to a more extended trip in our country, where he will be certain to find many new things to interest. When, a few years ago, the Rambler held the lucrative office of school trustee in his eastern home, an Irish lad wished to secure the position of teacher for his sweetheart, and said, in conclusion to his ardent solicitation, "Sure, Mr. Rambler, along with the rist of the applicants ye's must give her a *shoo*" (show). It is so with the people south of the Tehachapi. We want our northern friends to give us a "shoo," and we are bound to have it. RAMBLER.

ADVANTAGES OF SELF-SPACING FRAMES.

DR. MILLER ASKS, WHAT HIVE AND FRAME SHALL A BEE-KEEPER ADOPT IF CIRCUMSTANCES ARE SUCH THAT HE IS IN POSITION TO START ANEW?

When one has settled on a frame, he has gone a long way toward deciding the hive he shall use. As I prefer the frame that is used in the Dovetail, with only such variations as shall make no difference in the size of the hive, perhaps I can do no better than to adopt the Dovetail. But it will do no harm to talk the matter over before deciding.

On looking at a Dovetail hive, my first thought was, "I shall never be satisfied with a hive having only hand-holes for handling, with no cleats." And that's my last thought on that point, after quite a little experience. A hand-hole doesn't give you so good a hold as a cleat made of ⅞ stuff. The cleat gives a choice as to what spot you will take hold, and it is often more convenient or easy to take hold at some other point than right at the center of the width of the hive, where the hand-holes are. Then, too, I don't always handle a hive alone, but often want to lift it with some one else. Two persons can very readily pick up a hive with cleats, but it's a very awkward affair if there are only hand-holes. You may reply, "It's much better for one to handle a hive alone." You may not always say that. Besides, you can handle it alone better with cleats.

The weakest part of a hive is the thin piece left by rabbeting the upper part of the ends. This is often split off. Put on a cleat flush with the upper surface, and there is no danger of splitting.

But I suppose there is no law against putting cleats on the Dovetail, and that can be done whether it has hand-holes or not.

The distinctive feature that gives to the Dovetail hive its name—that is, the dovetail joint—is the joint desirable, I think, above all others. In strength for holding the parts together without warping, and for convenience and surety in rapidly putting together with exactness, it excels.

If I am not mistaken, friend Root, you have made the length of the Dovetail hive such that the space between the end-bars of the frames and the ends of the hives is $\frac{5}{16}$, or $\frac{1}{16}$ less than that which has been in common use. A sixteenth of an inch is not a matter of very great consequence, perhaps; but so far as it makes any difference, is that difference for the better or worse? So far as it makes any difference, it makes it just so much harder to lift out a frame without striking it against the end of the hive, and thus makes manipulation slower.

In my old hives, with a ⅜ space, with a variation in the end of the hive, or in the end-bar of a frame, or in both, it sometimes happens the space becomes so much less than ⅜ that the bees fill it with glue, and then there is trouble. The $\frac{5}{16}$ space makes less probability of combs built in the space, but that doesn't often occur with ⅜, and perhaps never if the space is exact. But even with exact spacing, if the bees were somewhat crowded for room it is possible they might do some building in the ⅜ space. There is also very little chance for the hive-ends to warp with the dovetail joint, and frames may be so strongly made that they can not get out of square, in which case there would be no danger of bee-glue in the space. So it is not well to conclude too hastily that ⅜ would be better.

In making the hive for frames at fixed distances, how far shall the frame be from the side of the hive? If the combs are built true, and if the upper parts are filled with sealed honey, there will probably be left between two such sealed combs a space of about ¼ inch. Now, if one of these combs be pushed tight up against the side of the hive, it will make a space of ⅛ inch between the combs and the side of the hive. To make the space ¼ it will be necessary to move the comb out ⅛ of an inch, so we must nail in each corner of the hive little strips ⅛ in thickness.

So far as my experience has gone with the Dovetail hive and fixed distances, I think the worst thing is the trouble of getting out the dummy. If wedged in with a stick, that stick is glued in tight, and it takes no little tugging and prying to get it out, if, indeed, it is not broken in the operation. Is there any need of wedging in? The main object of fixed frames is to have exact spacing; and if the frames are all pushed up snug to place, isn't that enough without wedging? And is it necessary for the dummy to fit in so tight? In my old hives with loose hanging frames, the dummy hangs loose like the frames, and I don't see any great objection to the same thing with fixed frames. We are not planning to have the hives turned upside down; and in hauling or handling there is no danger that the frames can move enough to do any damage, even if the dummy has a little play.

Let us see how the space will figure out in an eight-frame Dovetail. We start with an inside width of 12⅛ inches. After nailing in each corner the ⅛-inch strips, there is left 11⅞. The 8 frames will take 11 inches, leaving ⅞. In that ⅞ space we are to hang a dummy, say ⅜ thick. In order to make sure the dummy shall

not crowd too close against the comb, we must, either by an end-bar on the dummy, or by some other means, have a projection of ⅛ inch, and, indeed, we want this ⅛ projection on both sides of the dummy, for the little strips in each corner of the hive will keep the dummy only ⅛ inch away from the side of the hive, allowing bees to be crushed. If the end-bars of the dummy project ⅛ on each side, that will make sure always of a space at least ¼ inch between the dummy and the side of the hive, and also between the dummy and the first comb. That makes the end-bar of the dummy take up ⅝ of the ⅞ space we had, leaving ¼ inch play.

Now push the dummy close up against the frames, and this ¼-inch play, together with the ⅛-inch strip in the hive-corner and the ⅛ projection of the end-bar, will make a ½-inch space between the dummy and the side of the hive. The question may arise, whether there is any danger of bees building in that half-inch space. I think hardly; but in actual practice there will probably be less than half an inch space; for as soon as the bees have a little chance at gluing, the 8 frames will not be got into 11 inches, and my only fear is, that the ¼-inch play will hardly be enough. Possibly it might be better to make the dummy of ¼ stuff, and thus get ⅛ more play.

Of course, planned as I have indicated there is nothing to hinder any one from wedging up the dummy if he wishes. A wedge could be put in for hauling, or in any case where the hive was to be rolled over and over, and left out for ordinary usage.

Now, what's wrong in such a hive? Should the space between end-bar and hive be $\frac{5}{16}$ or ⅜? Should the dummy be ¼ or ⅜ stuff?

Marengo, Ill. C. C. MILLER.

[Before we proceed to the several points suggested by Dr. Miller, we want to go on record as saying, with our good friend, that we are willing to be converted from the error of our ways—that is, we do not wish ever to get into a rut where we can not get out—or, more specifically, into accepted lines of bee-appliances when there may be something better.

We will admit, with the doctor, that there are some decided advantages in the old-style Hoffman frames having top-bars widened at the ends so as to fill up the space and cover up entirely the rabbet; but we could not adopt that style of top-bar without changing the length of the standard Langstroth top-bar; and for a supply-dealer this would be an insurmountable obstacle. Mr. Hoffman uses a rabbet only about $\frac{3}{16}$ wide and ¼ deep, the tops of the frames coming exactly flush with the top of the hive. To make the rabbet only ¼ inch wide would shorten the Langstroth top-bar to 18⅝ inches, and this is out of the question, especially when we take into consideration another fact—that, in order to get the full benefit of this rabbet, the bee-spaces must be changed from the top of the hive to the under side, so the frames will, in every case, come flush with the top edges of the hive. Enamel cloth, according to Mr. Hoffman, would then be laid squarely on top of the frames. This would cover up entirely the widened ends of the top-bars, preventing accumulations of propolis from the top side, all of which is very nice; but bee-keepers nowadays do not want enameled cloths; neither do they want bee-spaces discarded from the top of the hive. This being the case, we were under the necessity of making a compromise, using the tin rabbet and straight top-bars.

But you say, doctor, "Why not have kept on with the same original Hoffman frames we started out with?" Because the rabbet in the hive had to be ½ inch wide—so wide, indeed, that we found it killed a good many bees when these widened ends came down into place. Then we found, also, that the average bee-keeper will not nail end-bars so they will come exactly flush and even with the corresponding widened part of the top-bar; therefore to preserve the bee-spaces as they were, and preserve the length of the top-bar, and to simplify its construction as well as reduce the expense, we adopted what seemed to us then, and what seems to us now, to be a better arrangement. So far we have had a good many letters, approving of the change in the Hoffman frames where the two have been tried side by side, and our experience points in the same way.

Now in regard to that V edge. We are well aware that, theoretically, this is objectionable, and perhaps it is so from a *practical* point of view in some localities; but we are of the opinion, doctor, that, if you were to try the square edges and the V edges for a couple of years, side by side, you would decide with Mr. Hoffman, Mr. J. H. Nellis, and the other bee-keepers who were pioneers in the use of this frame; and, besides, you may remember that we first started with the square edges, and were very glad to change to the V edge. We should be pleased to have more reports from those who have tried the old style and new-style Hoffman frames together. We should like to know *particularly* whether the V edge proves objectionable.

There is no need of wedging the dummy unless Hoffman end-bars having *square* edges are used. This is one of the reasons why we prefer the V edges. The dummy for 1894 will have a slight bee-space on each side, and a top-bar that will enable the manipulator to draw it out easily.

Your objections to loose hanging frames, and points in favor of the self-spacing frames, are all well taken. We have tried for two or three years back to preach that sort of doctrine; and the result is, that bee-keepers in the West are beginning to agree with the bee-keepers in the East, who have generally held to the self-spacing frames for many years. But, taking it all in all, we do not expect that the bee-keeping fraternity will adopt them exclusively. If propolis were ten times worse than it is in Medina (and we have never been in a locality where it seems to be any worse, so far as we could discover from hive-appurtenances), we would use loose hanging frames. At the same time, we recognize that there are many other competent bee-keepers who think differently, and, very possibly, can produce their crops of honey as cheaply per pound as do those of us who hold to the other view. Of late we have said little or nothing in favor of thick bars for self-spacing frames, and had thought that we would say nothing, but let them speak for themselves. We should have said nothing at this time except that Dr. Miller calls for this footnote, and here it is.]

THOSE BEE-ESCAPES.

CIRCUMSTANCES WHEN THEY ARE AND ARE NOT INDISPENSABLE.

I see by your footnote to the article of E. France, page 777, that you ask for more opinions on the escape, from those producing either or both extracted and comb honey; and as I have tried both, and the escape for both, I will contribute some proof both ways, for and against the escape.

Now, I must say that Mr. France is right about not wanting the escape, and can get

along without it. I have proved to others a great many times that the escape was useless, and just as many times I have proved it to be an indispensable article of the apiary. There are two chief conditions wherein it is contradictory both ways. If I am working for comb honey, using separator-section supers, and a good flow of honey, I would not take any bee-escape as a gift, and be paid to use it, because they are a nuisance, from the fact that the apiarist usually picks out sections here and there, but does not take the whole super clean; and the smoker does, as Mr. France says, send the bees out of the way, and a brush will finish the few left. But if the non-separator-section super is used like the Heddon, the escape does very well, and in that case the bees can be nearly or quite all driven out as quickly as the escape can be used, the super overhauled, refilled, and returned to the hive without any trouble. It has proved just the same with me when using the second and third stories for extracting, or for the wide frames for sections.

We will now look at the other side, taking the meager, light, and dashy honey-flow where there is a rush for a few days, then a stop for two or three days, then another dash of a flow at the closing-up of a flow of honey, and there are hundreds of sections to come off, then the bee-escape is a boon, or, as some have said, a Godsend to the apiarist, and a thing that he can not do without unless he wants to have his nice sections spoiled by the bees puncturing them, as they nearly always do when there is a poor flow of honey, or at the end of the season; then the escape has proved with me to be indispensable. And then, repeated trials have convinced me that the double-cone Reese is the best, with cones at least 2 inches deep (2½ inches is better), with the space between the board the cones are on and the tops of the sections or frames below not less than three to four inches, so that the bees may have plenty of room to cluster.

At these necessary times referred to I would just as soon have six or eight escapes as to have a good helper to take off sections, or to clear extractor-cases; and for their benefit, when they are needed, any one can afford to house them when not needed. Another time when they are extremely valuable is, that there are in some places, and in some seasons, times when the bees are gathering to their utmost ability from daylight till 9 to 11 A. M.; and during the rest of the day, or till perhaps 5 P. M., there would be robbing at every move or at every hive that is opened. At such times, put on a dozen or more escapes, as the case may be, late in the afternoon. The next morning, or during the forenoon, take off the cases free of bees, or do such other work as is necessary while the bees are busy; and during the time from 11 A. M. till late in the afternoon you have the benefit of the escape, cleaned sections, or extracting-cases. Therefore the argumentative expert bee-keeper, taking season, location, honey-flow, and number of colonies, and whether there are other bees near, all into consideration, can, if he chooses, prove that the bee-escapes are worthless or unnecessary, or one of the indispensables in the apiary, and that it is next to impossible to do without them. I have seen the need of them, and I have thrown them aside; then perhaps in three days or a week I have been obliged to use them again.

But I would say, have some of them, and don't be satisfied with only one exit in a board. In my Reese's I have six or eight cones. I prefer eight in the place of six, because, the more escape-holes, the less pricking is done to the sections, and the freer they are cleaned of bees, whether section or extracting-supers. But if extracting supers, and there are any larvæ (uncapped brood) in the case, don't expect any known escape to clean the case, although it may. H. L. JEFFREY.

Woodbury, Ct., Oct. 21.

[You have corroborated and added facts in proof of our statement to the effect that there are times when the bee-escape can be used to advantage, and there are times when it can not. This is a practical question, and we should be glad of further testimony.]

AN EXPERIMENT WITH GRAPES.

HOW TO SAVE THEM AND HOW TO MAKE JELLY WITHOUT SUGAR.

I see, by the last GLEANINGS, that you have been using up your grapes in jellies and unfermented wine. This is good. The grape is good food in any way you can use it, if it is not allowed to ferment, when its food qualities disappear and its power to "deceive" and "bite" takes their place.

This year I had a good many grapes, and I resolved to try an experiment. I am not myself partial to fruit that is sweetened. I want the natural sweetness combined with the natural acid. To get them from the grape, the skins must be worked with the pulp; for the acid and coloring matter seem to be in the skin. We usually get both when we cook the grape. Could we get them by treating them as apples are treated at the press? And then, could the expressed juice be turned into jelly, as apple juice is turned into jelly by the steam-evaporator?

To settle these questions I sent some 400 lbs. of grapes to the cider-mill to be ground and pressed, and the juice evaporated into jelly—if it could be—using no particle of sugar in the process. The grapes were ground, then pressed, making some 33 gallons of juice, which was run over the evaporator immediately, and came out very fine jelly. The 33 gallons made 5½ gallons of jelly, at a cost, all together, including grapes, hauling, pressing, and jellying, of $1.00 per gallon. This jelly I can eat every day, and three times a day, without satiety—a thing I can not do with any of the fruits put up in sugar. It answers as a table sauce, and, in an emergency, can be reconverted into wine—sweet as the ancient Jews used in their passover feasts, when all leavened or fermented things were by law put out of their houses.

This experiment I made in the interests of temperance, to show that our grapes *need* not be turned into grape juice, to be fermented and alcoholized, and labeled as "Champaign," "Port," or "Heidsick," etc., and put on the market for the simple to "look upon" and be "bitten" by them.

The result proves this:

1. That the ripest and best grapes make the best jelly.
2. That no sugar is needed to make jelly.
3. That all our extra grapes can thus be kept in a convenient form for continual use.
4. That there will be no excuse for turning the surplus grapes into the wine of commerce, as soon as the preceding facts are made known to grape-raisers; and it is certain that they need to know them, now that grape-raising has come to be so general, and the crop so large, that good grapes from Northern Ohio were selling this month in the Cincinnati markets for 15 to 20 cents per 10-lb. basket. G. A. ADAMS.

Perrysburg, O., Oct. 21.

RAMBLE 96.

RAMBLER OUT PHOTOGRAPHING.

It has often been said, that the occupation of bee-keeping in California enlists the attention of the bee-keeper for only a limited time; and the saying has some force to it when a person has been in the field for only a year or more. That the bee-keeper could spend more time with his bees, and that some do, is also evident; but the great majority of the fraternity give attention to their apiaries only through the honey-season, and scrimp the time to the least number of months possible; therefore, according to the investment and labor performed, and the tolerable certainty of a crop, California is equal to any country in the world for the cheap production of honey; and to a bee-keeper who owns a grain, fruit, or poultry ranch, which needs more or less attention through the year, the profits from the apiary seem to be a clear gain; while the few weeks spent in the cabin in the foot-hills, where the apiary is generally located, is regarded more as an outing than as a period of labor.

Many bee-keepers, however, who have not invested in a home of their own, with all of the concomitants of wife, babies, dogs, cats, and quarrelsome neighbors, take up with almost any kind of honorable labor between times; and it was owing to the fact that idleness stared him in the face that the Rambler consented to go for a while with a traveling photographic outfit. As a large number of bee-keepers are interested in this art, and a larger number are interested in the half-tones made from time to time, I will give a few episodes from my brief journey with the outfit.

The apparatus consisted of a covered wagon, which served as a dark-room, and in which were carried all accessories of the art, and a compact camping-outfit. Two black horses, of uncertain age and certain spareness, were attached to this. A buggy trailed behind. In the buggy were two dogs, and behind was a led horse. The outfit did not fail to attract attention. I consented to take the place of the senior member of the firm for a few days; and with the junior member, a young man of various accomplishments, I set out from San Bernardino for fresh fields to conquer.

The plan pursued by a traveling outfit of this kind is, to enter some of the smaller towns and proceed on speculation, or "speck" the town, as the fraternity say. Instead of going around and asking persons if they wish a photo taken of their house or store, or an interior flash-light in the evening, and which would result, in a majority of cases, in a negative answer, the camera is taken out on the main street, and several exposures made. Here our junior member put in practice one of his accomplishments; and that was, in getting people out and in range of the camera. When a few exposures are made, the plates are taken to the wagon, developed and dried, and a proof taken. This proof is then shown to the various individuals, and several orders are taken, provided the town has not been "specked" recently by other parties.

Our first halt was for a few hours in Riverside, where our junior fell in love with a mule team for which he traded our team of horses. The mules were matched by contrast—one large white mule, with huge ears and cocked ankles; the other, a pudgy black mule of uncertain age and disposition. Upon going forward we discovered that the black mule required considerable whip-work to get him along. His hide seemed to be remarkably tough; but, like the Kodak, if the right spot was touched, the mule's heels would do the rest. The mule team was, however, put through the whole length of magnificent Magnolia Avenue, fifteen miles, to South Riverside, where, late in the evening, we pitched our tent. Here we stopped a few days and "specked" the town with profit, and where my junior got into two foot-races and was beaten.

From South Riverside we followed the Santa Ana River toward the sea; and as the shades of night began to fall we lost our road and were compelled to camp. Finding a grassy plot where our mules and led horse could feed, we pitched our tent; but, alas for our own appetites! we had not a morsel of food with us, and not a drop of water near. So we retired, hungry and thirsty. My junior, who had been singing and whistling "After the Ball" all day, crawled into his cot as demure as a jack-rabbit, and we were both quite silent until next day at ten o'clock, when we arrived at a little Mexican grocery where we found eatables in the shape of crackers and sardines, and didn't feel much hunger after all. In our camp the previous night I discovered the utility of having two

dogs along during the daytime. The dogs very kindly carried the fleas, and, during the night, we carried them, or, rather, dug our fingers after them. There's nothing like having a mutual understanding with our domestic animals.

In Santa Ana we made a stop of several days, and worked the flash-light branch of the business on interiors. While in Santa Ana we camped near the race-track, where there was a number of horses of all sizes and degrees. By the exercise of persistent endeavor, my junior traded the pudgy mule for an old, poor, and blind pinto. The pinto, however, had the go in him, and made a very good match for the white mule.

The stables at the race-course were occupied by quite a number of noted horses, all in training for the races that were soon to come off. In contact with the horsemen here, as in other places, and especially around livery-stables, I notice that those who have much to do with the noble horse are usually very profane men, and their conversation is interlarded with oaths. Texas Jack seemed to be the chief sinner in this crowd, as well as something of a singer, wherein his songs were of the race and bets. A well-regulated stable for a fast horse has almost as many traps as one will find in an apiary. Pads, toe-weights, heel-weights, hoof-cleaners, and many other things come into daily use while the horse is in training.

We left the active scenes around Santa Ana and dropped a few miles further along, and camped at the noted bathing and summer resort of Newport Beach. Our visit was, however, ill timed for business, for the pleasure-seekers were rapidly leaving for their homes, and the beach was a dull place indeed. About the only thing to be done was to bathe once a day, and then roll in the white pure sand, said sand being composed of pulverized sea-shells. A further recreation was to go out on the long wharf and fish, or look at others patiently waiting for a nibble. I found our bee-keepers, Mr. and Mrs. Bonfoey, of South Riverside, here. Mr. B.'s hobby was the spearing of large fish. His method of spearing was radically different from mine. While he was fond of throwing his four-tined Neptune-like spear with great precision into the finny denizens of the salt sea, I prefer to spear them with a four-tined fork at the breakfast table, and am quite an expert in my line as Mr. B. is in his. Mrs. B. is an expert cook in the fish department.

Old ocean throws up many a curiosity in the shape of shells and sea-weeds. The kelp that is thrown up is provided with a perfectly round ball six inches and over in diameter. This is hollow, and acts as an air-cushion to hold the plant upright in the water.

During our stay at the beach my junior got hold of another song; and the refrain, "Oh! then let us kiss and make up," was frequently rung in my ears; but owing to the fact that the

FROM THE SEA.

junior's best girl was at the beach also, and the song was warbled for her benefit the greater share of the time, the bore was not so great as it otherwise would have been. But, oh dear! when we were all ready to depart, what a waiting-time I had of it for them to bid each other farewell! and, Mr. Editor, will you please tell your anonymous ladies and others, that I won't be hampered that way, nohow? After we had returned to Santa Ana, and the senior photographer had taken up the line of work, how nicely I did take up my old black pancake griddle and swing it over my head and shout the shout of freedom! No, Miss or Mrs. Anonymous, don't you dare to say any thing more to me about matrimony. I am a confirmed, crusty old bachelor; and the more you say in favor of matrimony, the "confirmder" I get; and to express to you how I feel here in California, I will ask you to read the following quotation:

Since I came to California,
  Like a vision I recall
How the winters used to linger
  Just to greet the coming fall.
There was just a breath of summer
  'Twixt the autumn and the spring,
And frozen ears and noses
  Were a very frequent thing.
But here's the land of sunshine,
  Where blizzards never blow—
Where the bees are always busy,
  And the roses love to grow—
Where nature seems a smiling
  In happiness and glee;
Right here in California, baching's
  Good enough for me.

THE RAMBLER.

LANGDON NON-SWARMER A SUCCESS.

A SUGGESTED IMPROVEMENT.

I have wanted to report about the Langdon non-swarmer for some time, but there seem to be many reporting failures. They have been an entire success with me, and I think they can be with all practical bee-keepers. I don't think I make mine quite like Mr. Langdon's. I don't have to bore any hole in my hives—the Dovetailed. The bees should be turned from one hive to the other every four or five days during swarming time. One needs to be very careful to get them adjusted bee-tight. I never had any trouble with bees destroying brood except eggs. This will cause the colonies to be a little weak for the fall flow, if there is any. I had trouble when I tried to requeen these colonies. Bees enough would get back through the cone so that they would ball the queen. To remedy this I closed the cone, then all went well.

Here is the only plan by which I can procure honey here: I place a case of half-depth frames on hives for extracted honey without any queen-excluder between. They will soon go to work in these, and the queen will soon commence laying. As soon as they are nearly filled I raise them (be sure to run the queen below),

put on an excluder with a case of sections between this and the upper case, and you will get honey if there is any to be had. I have secured 30 lbs. extracted honey and 24 lbs. comb honey from colonies worked this way, when others have not made over 15 to 20 lbs. per colony, comb. Now, my colonies worked with non-swarmers on have stored two pairs of 70 lbs. each, comb honey; two pairs of 60 lbs. each, extracted honey.

In the way of feeding back I have secured these results: I have fed one colony 70 lbs. extracted, and received 60 lbs. comb; I also fed one colony 60 lbs. extracted, and received 50 lbs. comb. C. S. NEVINS.

Wagstaff, Kan., Sept. 16.

[We sent the above to Mr. Langdon, who replies:]

My experience during the past season shows that my circular is wrong. The slide should be changed once in *four* days instead of *seven*. It also says (which friend Nevins likely did not see), that, if a rim were nailed on the back of the device, no hole would be needed in the hive. I shall make them all so the coming season.

I did not find that the bees were light for the fall flow, though I have had them heavier. One thing is sure—if they are lighter than they would otherwise be, there is not a great army of bees to board during the interval between basswood and goldenrod. The effect is the same as though the queen had been caged, and there is a saving in that The plan of ventilation given by friend N. is along the line that I have adopted for use next season.

Mr. Nevins' experience is another straw to prove that running two working forces together can not be excelled or equaled for getting bees to work in the supers, especially if there is a short crop.

I claim as strongly as ever, notwithstanding the adverse reports that have been given against the non-swarmer, that, if the bees are given proper room in the supers, with good ventilation, so as to be *comfortable*, they can be kept from swarming with an increased yield of honey by the use of my device. My success with them on my house-apiary is better proof on this point than most of these reports have been that they will not work. Something was at fault that could have been remedied.

H. P. LANGDON.

East Constable, N. Y., Oct. 4.

THE NORTH AMERICAN BEE-KEEPERS' CONVENTION AT CHICAGO.

Continued from last issue, page 818.

In our last issue we left off with the address of welcome, from the editor of the *American Bee Journal*. Following this was the

PRESIDENT'S ADDRESS.

The doctor said, in looking over the published list of names of those who were to be at this convention, he could count a quarter of a hundred, any one of whom it would be a real pleasure to spend a solid day with in bee-talk. The opportunity of meeting all of these, and more, at one time and place, was a red-letter event. They were not assembled for bee-talk alone. No mean part of the enjoyment was the meeting of old friends, and the cordial grasp of the hand; and why should they not have a sociable time? The doctor, while acknowledging the propriety of going through with the formality of an introduction, the third person making the other two acquainted, thought it also proper, as they were all bee-keepers, for two strangers to get acquainted after this fashion: "My name is Smith—who are you?" Continuing he said, "Our journals are invaluable; but the rapid exchange of ideas allowed in discussions at a convention has brought to light many a truth that otherwise would not have become public property."

There were many interesting topics for discussion, but he made an earnest exhortation for the full use of the question-box; for in no other way could they meet the wants of all.

This address was followed by a report from the treasurer, showing a balance due of $4.22. Following this was an able address from Prof. A. J. Cook, entitled

BEE CULTURE AT OUR EXPERIMENT STATIONS.

Bee-keeping, he said, had merits that very few of even the bee-keepers themselves appreciated. It not only gathered up the most wholesome article of food, but conferred an added benefit in the important work of pollenizing flowers. There was no question but that the productiveness of many of the fruits and vegetables was often tremendously increased by bees. It was true, that other insects aided somewhat in pollenizing but to a very small extent in comparison with the bees, and the latter were ready early in the spring. Our experiment stations were the product of the civilization of the nineteeth century, and the United States government, recognizing the importance of agriculture, and the added impetus given to any business, had donated $15,000 annually to each State, to be expended in experiments in agriculture; and 47 States and Territories had availed themselves of this. Thus three-quarters of a million of dollars were spent annually in the interest of agriculture. Apiculture was a very important branch of agriculture; yet in the face of all this, only 4 of the 47 States had done any thing to promote the interests of bee-keeping. Probably not $2000 was spent in experiments in apiculture, against three-fourths of a million spent annually for agriculture. This, he thought, was a stupendous injustice, and that, in all modesty, bee keepers had a right to claim $1000 annually in behalf of their pursuit; then $40,000, instead of the scant $2000, would be expended. He suggested that each State association appoint a good committee of live, wide-awake bee-keepers, to wait on the Board of Directors of the several stations and set forth the reasonableness of their demand. This act should be supplemented further by personal letters. Bee culture had met with many disasters during the last few years, and wise experimental work and assistance from the State was what was needed. If there should not be a waking-up along the line, it was because bee-keepers were asleep to their own interests.

A discussion followed, in which it was asked what States had made a move in this direction. Prof. Cook named Rhode Island, Iowa, Colorado, Maryland, and California. In the White City the display of the bee-keeping industry was not what it should be. For instance, in the California building all other industries were represented, but honey was not shown.

A paper was then read, from Mrs. Axtell, on the subject—

WHAT OUR EXPERIENCE WITH BEES HAS TAUGHT US DURING THE PAST FEW YEARS.

They had learned that it was not wise for *them* to make bee-keeping a specialty, but, rather, a side issue; and yet they always aimed to let nothing cause them to neglect the bees. Thus, if bees failed them the other business would enable them to make a living Again, experience had taught them that *large* brood-

nests pay best, taking one season with another, because they save time in taking out and replacing combs for the purpose of reducing the brood-nest in winter and in expanding it at other times. Where one has 100 or 200 colonies, they think the handling of combs made quite an item. It was better to have too large a brood-nest than one too small. They had learned, also, that, so long as bees paid so poorly, it did not pay to try to build up weak colonies by feeding, unless they had valuable queens; and, lastly, that a good colony with a large brood-chamber left alone, and not drawn upon for either honey or brood, would seldom pass a season without getting enough to winter on.

Some little discussion followed this paper, in which it was held that the points were more applicable to the locality of Mrs. Axtell. R. L. Taylor asked, why, if she liked large hives because of the trouble of handling combs, not have the Heddon? C. P. Dadant said that those colonies that do not swarm from year to year supersede their queens as readily as those that do swarm. The question was asked:

WHICH IS BETTER—EIGHT OR TEN FRAME HIVES?

Considerable discussion took place. Some held that a ten-frame hive, when necessary, could be reduced to 8 frames by means of dummies. As usual, some preferred one and some another. When a show of hands was called for, it was found that 16 favored the ten-frame hive and 42 the eight-frame. The rest present evidently did not know. It was then asked how many had changed from an eight to a ten frame hive. A rising vote showed only one. When it was asked how many had changed from ten to eight, 24 responded. R. L. Taylor thought it was a question of locality, and what the queen could do before the honey-flow. There was such a thing as having too much room. J. M. Hambaugh wanted all the bees he could get, and therefore preferred a large brood-nest.

THE LANGSTROTH FUND.

At this point a letter was read from the Rev. L. L. Langstroth, extending his greetings to the convention. As Mr. L. was in somewhat straitened circumstances, Mr. Thos. G. Newman made a strong appeal, and urged that bee-keepers, inasmuch as they owed Mr. L. a great debt, should give such sums as they felt able. In response to this, the sum of $44.00 was collected on the spot, and the rest was arranged to be sent to Mr. G. W. York, 56 Fifth Ave., Chicago.

The question-box was resumed again. It was asked, "Have the Syrians any points of superiority?" Mr. Taylor thought they excelled in the *hinder* point. Mr. Frank Benton, the secretary, who had handled them in their purity at Beyrout, Syria, said they had some good qualities. They required a sparing use of smoke; were very prolific—too much so; but this could be regulated. In reply to the question as to how the Carniolan bee could be distinguished from the blacks, he said they were slightly larger, with light silver-gray bands, giving them a ringy appearance. As to their action, they do not run off their combs as do the blacks. When he handled them in their native country he rarely had use for the veil. When found to be cross in this country he would hardly think them to be pure. In comparison with the Italians he thought them generally gentler.

HAS THE MATING OF QUEENS IN CONFINEMENT BEEN SUCCESSFUL?

Dr. Miller thought not. Dr. C. V. Riley, entomologist at Washington, had been deeply interested in the question, and, in spite of the failures in the past, he thought the problem might yet be solved, and that the Departmen of Agriculture would investigate the question.

STANDING VERSUS HANGING FRAMES.

The question was asked how many preferred standing frames. A vote showed 9, while 49 preferred loose hanging frames.

EVENING SESSION, FIRST DAY.

The place of the next meeting was then discussed. Several places were named, among which were Toronto, San Francisco, Denver, Los Angeles, Buffalo, Columbus, and St. Joseph. After some discussion, a vote showed that St. Joseph was preferred by a majority.

The election of officers was next in order, and resulted as follows: For president, E. T. Abbott, of St. Joseph, Mo.; vice-president, O. L. Hersheiser; secretary, Frank Benton; treasurer, G. W. York.

Next followed a question on the subject of—

HOW CAN THE MEETINGS OF THE N. A. B. K. A. BE IMPROVED?

It was urged by some that the society be more representative. At present it was getting to be too local, as the list of members showed; that the society should be thoroughly organized and affiliated with State organizations, and that each affiliated society should send one or more delegates. Comparison was made with the European societies, and it was urged that the N. A. B. K. A. be more like them. The president acknowledged that our meetings were not as large as those in Europe, and asked the secretary, Mr. Benton, in regard to it. The latter said that, at one meeting in Frankfort, Germany, they had an attendance of 400; that they also had a large exhibition of bee-appliances, fruits preserved in honey, etc. The society included Austria and Germany. Prof. Cook, while acknowledging that, while all this was very nice for Europe, it was entirely impracticable in the United States. Our country was, he said, too large, and the traveling expenses too great; but in spite of this we needed not to feel bad, because we had good conventions as it was; and as the bee-papers gave reports, those who were not able to attend were able to get the discussions. C. P. Dadant agreed with Prof. Cook, and added that he had tried very hard to get the State and Provincial organizations to affiliate with the N. A. B. K. A., but failed.

Continued.

THOSE OLD BEE-BOOKS.

HUBER'S WORKS.

Those who have GLEANINGS for 1889 will find on page 389 for that year a picture of the celebrated man whose works I have before me; also as much of his history as will be sufficient for our purpose. We give the picture here again. Huber's method of conducting experiments with bees by the help of his wife, and a servant named Burnens, is, I assume, familiar to all. The praise lavished on Huber by the civilized world has been unstinted. By almost universal consent he occupies a front seat among naturalists and bee-men; and my talk to-day will, I fear, run more on the man than on his book.

The high position occupied by Huber is due to several causes, the first of which I would attribute to the real merit of his discoveries. But no matter how valuable or otherwise those discoveries were to the world, the very fact that they were the result of a purely mental effort on Huber's part would enlist our sympathy to a great-

er extent than if he had used his own eyes instead of those of his servant. The boy pianist, Hoffman, when in America, would bring an audience to tears by his marvelous rendition of the best works of the great masters; but if he plays the same pieces better and better till he is of middle age the tears will dry up, and at best nothing but a clap of the hands remain. We are very apt to make allowance for the weak and unfortunate, and it is well that we do.

It is impossible for me, and I presume it is for anybody, to state just how much originality may be found in Huber's "Observations," and just how far his conclusions are now accepted by bee-keepers. In Mr. Kellen's article, referred to above, which I translated from the German, he says:

FRANCIS HUBER—BORN 1750, DIED 1831.

"Francis Huber, by his investigations and researches in apiculture, did more to promote this science than all his predecessors who had employed themselves in the study of this interesting insect. It is his discoveries alone that marked that golden age in the history of apiculture which is destined to remain for all ages. Huber's observations are not only of the greatest importance in themselves, but wonderful for the manner in which they were made; for Huber was blind."

Now, that is a strong statement, and yet I am not ready to deny it in any particular; but how are we to account for what seems to me to be a fact, that, so far as honey is concerned, no apparent increase in its production is noticed or recorded in the fifty years after Huber's works were published, over the fifty years preceding that event? That is, how much did he help the producer of honey? Certainly his works cleared the sky of most of the abominable superstitions connected with the bee up to his time, and after that the ground seemed cleared off and leveled in anticipation of an edifice which should endure as long as bees swarm. But why does the scientific world make so much of Huber, and the bee-keeping world never mention him except as an ornament? I do not know that the name of Huber is now used by any association of bee-men, or in connection with any hive or frame now in vogue; and yet the man and his works have occupied a place in the literary world, the glory of which the lapse of about a century has not dimmed: and as time passes, the inquiring face of the blind philosopher will sink deeper and deeper into our affections, and cause us to rejoice that his inheritance is (or will be some time) in a land

"Bright, bright as day"—

where eyes, if needed, will not be dimmed by tears nor blindness.

The fact is, there are two sides to this matter, just as there are two blades to a pair of shears, and each is the complement of the other; at least, we will "play so," as friend Hasty once put it about Virgil. The work performed by Huber was, in the main, in reference to the bee as such—its habits, social economy, methods of propagation, etc. He covered a ground in this respect far in advance of what the scientific world then held, even if later writers have modified these conclusions in some of their minor details. He spread a canvas on the frame, on which a later genius put the picture which will remain; but which of the two men deserves the more credit is of no more account to me than it is to determine whether the paper I write on is of more consequence than the ink, or the ink than the pen. The three are very convenient.

LANGSTROTH

is the one who, doubtless, will always be mentioned as the complement of or successor to Huber. Beginning his researches at about the time Huber died, he so enabled the bees to direct their efforts that, within the memory of nearly all of us, the production of honey has assumed such proportions as to elicit the greatest expressions of surprise in those parts of the world where "the good old way" still largely prevails. Honey, in our country, has ceased to be a luxury, in my opinion, on account of its cheapness, although some do not so consider it. From this we see that Huber determined the thing itself, while Langstroth modified essentially the surroundings. We see an analogy to this when Franklin proved the identity of electricity and lightning. That was necessary; but it remained for Morse to provide a medium for the fluid that now compresses the world within the compass of a daily newspaper, and for others to light our cities with it, draw cars, and revolutionize the very framework of commerce. If, then, the relation which a bee sustains to the world may be so materially improved by better surroundings, who shall say that a man's conditions and environments do not materially affect his usefulness as respects society at large? A bee can never do any thing not peculiar to a bee; in other words, within certain limits it must "act as built." Huber largely determined those limits, while Langstroth gave the best possible opportunity for the *exercise* of what nature made. In a like manner, society should provide the best facilities for the exercise of human action in a profitable channel, and discourage, as much as possible, the wrong use of human ability. A man is not "built" until he has, at the end of life, passed through this channel. Life consists of "being built."

I have used the word "Langstroth" in a rather comprehensive or generic sense above, and I mean by it not only the Langstroth hive and frame, pure and simple, but every modification of either, or any hive whatever which has been invented under the incitement of what may be termed Langstrothism—a period of time which may be said, in general terms, to reach from 1852 to 1893.

Although Huber's works are not, I believe, now in type, they may be easily obtained, especially in French, the language in which they were written. They have been translated into several languages;* but their real value, aside

* In GLEANINGS for July 1st, 1884, will be found an article of great interest, from the pen of Thos. Wm.

from a literary point of view, is absolutely nothing when compared with Dadant's "Revised Langstroth," Cowan's or Cheshire's apicultural works, Cook's Manual, and some others. But the perusal of Huber can not, it seems to me, fail to add largely to the interest of bee-keeping, and that alone is worth a great deal. A farmer friend of mine once became tired of his farm, and thought of leaving it; but becoming interested in geology he studied the nature of the rocks and ravines on his place, and actually fell in love with it. Instead of plowing in uninteresting dirt he felt glad to dig in soil where the deinotheriums, iguanodons, and plesiosauruses used to wage battle and root around. Knowledge makes work pleasant, and changes a star into a beautiful world through the medium of the inner eye. By all means, read Huber, even if he is a yesterday's sunrise. One of his last sayings is well worth remembering: "One thing I have never been able to learn; that is, to forget to love."

Medina, Nov. 2. W. P. ROOT.

POOR QUEENS.

HEREDITY IN QUEENS, AND HOW FAR BACK GOOD AND BAD TRAITS MAY COME.

For the benefit of those who want queens from the one described by me in August 15th GLEANINGS, and for the benefit of all beginners, I should like to say a few words further. That queen, along with the others in my yard, seemed to get a bad chill last winter. I feared she could not survive another winter. I made haste to get from her what young queens I needed; then, as she seemed to be failing, I pinched her and put in a capped cell.

Beginners err in thinking they will be "fixed" if they get a queen from some great one. Extra-good queens will be likely to transmit their good qualities. At the same time, the daughter may mate with something objectionable. From that imported queen I got just one that mated to suit me. Now she is dead. I have nine of her daughters. I hope some of them possessing their mother's good qualities may mate to suit me.

On page 637 I said the queen left only one cell. I hunted for cells for perhaps three or four days to requeen with, and then, being busy, gave it up. When time to hatch, I looked: but the cell was hatched. That queen had destroyed three or four very fine cells that the bees had built in the meantime. That scored another good quality, the young queens destroying cells to prevent after-swarming.

For those young queens to mate three-banded Italian will be a small consideration. A good comb-honey season will be the test. I also intend to breed for bees that will go into the sections without bait sections.

Every bee-keeper in the land should interest himself in the destruction of poor queens. Poor people sometimes buy them. They not only lose the few cents paid for the queen, but lose the product of that colony for a year; or, if good honey-gatherers, they may be so cross as to be a vexation. Some seem to think even a poor queen will do to winter a colony. What good is such a colony after it is wintered?

A few days ago I killed a daughter of that great queen because I scored so many points against her. First, the colony built and capped several queen-cells while she was a virgin in the hive. I concluded to tolerate that. I tried to blame that on the cussedness of the bees. Next she was a day or two late in beginning to lay when the weather was good for her to mate. If you investigate closely I think you will find that a bad trait, not in itself, but as an indication of a poor quality. After she had been laying a few days, with but little honey coming in, I found two queen-cells with eggs in them. That settled it. I pinched her, and abandoned the colony.

In breeding queens, the grandmother should be as good as the mother. If the mother be good and the grandmother bad, then the badness of the grandmother's family will develop or crop out in the grandchildren, on account of the drones. That great queen of mine had a good mother, an imported queen whose bees jumped right into the sections last year as soon as there was honey for the sections. So you see those nine young queens have a good pedigree, both in mother and grandmother. Oh if I could only have controlled the mating of those nine virgin queens! However, we will hope for the best. Do not sell poor queens. Kill them. Kill every queen that swarms out from under empty sections, provided the super, ventilation, etc., are all right. Try to supersede all queens whose bees persist in after-swarming, viciousness, excessive burr-combs, and all such traits; much depends on the drones in your yard and neighborhood. PHILO S. DILWORTH.

Ingram, Pa.

EXPERIMENT STATIONS AND WHAT THEY ARE DOING.

DO YOU RECEIVE FULL VALUE FOR YOUR FIVE CENTS?

On page 782 Mr. Elias Fox takes exception to the article recommending that the government establish an apicultural station. It has been said by one of our American sages, "It is one of the special dispensations of an all-wise Providence that every board has two sides, and that no man is able to see both sides at once." I have no quarrel with any one who does not see the same side that I do; but to some of the arguments used I have somewhat to say.

There are but few who have not heard of the "Billion-dollar Congress." Since it has been demonstrated that it requires about this amount to run this government successfully, we do not hear so much as we formerly did of this expence. This is supposed to be used to pay the expenses of this government for two years, which would be somewhere about five hundred millions for the expense for one year.

We are prone, as Americans, to boast of our vast population In this we will be conservative in this article, and for convenience will say we have only sixty millions of population. Of this number there are nine millions engaged in agriculture, fruit-raising, gardening, and kindred pursuits. This is about one-seventh of our population who are engaged in agriculture. Now, the burden of the expense of this government is borne (or at least we constantly hear it is) by the agricultural population. Now, in all justice and equity there should be expended for their benefit one-seventh of the expense of the government. Now, what is the fact? Why, simply that the expense of the Agricultural Department is *less* than three million dollars. This makes an expense, for every individual in this nation, of about five cents. The question now is, "Is this well expended?" If it is, would it not be reasonable to infer that an appropriation to solve some of the mysteries of

Cowan, relative to all the works of Huber — time of printing, etc. He refers to the edition of 1841, which I have used. He also speaks of 1004 "old bee-books," reaching down from 1472. Of these, 505 were in German; 133 French, 98 English.

bee-keeping would be also well expended? While I am free to confess, that sometimes such funds are worse than wasted, and there might be some one who had a "political pull" receive an appointment as experimenter in apiculture who would be a clog in the wheels of progress, yet such a one would not last long. It would take a man who had an inherent love for the business to stay by it for any length of time. But there is no use *speculating* in the future when we have *facts* in the past to refer to. It is the principle of this and other governments to aid science financially. Thousands of dollars have been expended in sending expeditions to Iceland, Cape of Good Hope, or Kamtschatka to view an eclipse of the sun or a transit of Venus. Such things benefit none financially, and satisfy the curiosity of but few; yet no man, with any love for his country, can object to such expenditures.

Let us see how some of the money of the agricultural departments has been spent, and see if we can give a good account of *your five cents*.

The several experiment stations which receive aid ($15,000) from the government have expended it in many ways, not all alike. Some have purchased the best blood of thoroughbred sheep of the various breeds; tested and compared them, and in their reports are carefully prepared tables of the amount of feed each kind consumed, and amount of gain each made, while no kind is recommended; yet at a glance there can be seen which kind makes its owners the most money, and each one can draw his own conclusions.

Others have purchased cattle of various breeds and ages, and fed them for the market. The amount of grain and hay consumed by each is carefully noted, and the gain of each breed, and at each age; so that the farmer now knows how much he may expect his cattle in the feed-lot to gain in a named length of time; also how much grain and hay they will consume; and, months before, he can tell how much they are going to cost him when ready for the market.

Others have conducted similar experiments with swine. On investigation, we find the government has done a vast amount for the farmer besides investigating diseases of domestic animals. Other experiment stations, and Wisconsin leads in this, have been looking after the dairy cow—the amount she eats of the various foods, the amount of water she consumes, the amount of milk she gives daily, and for the year, its per cent of butter-fat. The nutritive ratio of the food fed to the cows, and its costs, have all been subjects of experiment and investigation. While the kind of barn has not, so far as I know, been investigated yet (though it should be), the kind of silo has received much attention—how to build it, and its cost, with instructions for its construction and material. Specifications are all prepared at government expense. The implements for testing the amount of butter-fat in milk have the indorsements of the experiment stations. These cost less than one dollar, and yet how many there are who keep cows that do not now, never did, and never will pay the cost of their keeping! The time is coming, almost now is, when the purchaser of a cow will insist upon knowing the amount of butter-fat in the milk of a cow he purchases.

To arrive at conclusions by running one hive for comb and another for extracted honey would not establish the reputation of the experimenter as an infallible authority on matters of apiculture to any alarming extent. There is just a little too much such work done now.

Just one more reference to the experiment stations, though many others could be cited, and we will quit with this; that is, the matter of testing small fruits, especially strawberries. Do not the stations give some varieties very high praise, and condemn others severely? and is not their judgment valuable, especially in their own locality? Many kinds are especially valuable in certain soils and climates, and worthless in others; and no doubt apicultural implements will be found similar. Some places require a ten-frame hive; in others an eight is sufficient. A deep brood-chamber would give best results, perhaps, in some places, while in others shallow frames would do best. Foul brood could not possibly be developed from chilled or dead brood in Texas; but in the North, where sometimes there is a change of temperature of 70 degrees in four or five hours, it might. There may be degrees in deadness. There are several experiments with bees that should be conducted in places far removed from bees of any kind except those taken to be used in the experiments. Five years since I knew of such a paradise for bees, not then occupied; but now it teems with bees. I still know of alfalfa-fields on which there is not yet a single bee. How long such places will remain unoccupied, I know not—surely not long.

In view of the importance of agriculture to this nation, and of the small proportion of the funds that are expended in its behalf, and of the importance of apiculture, a branch of the agricultural industry which has as yet received practically nothing, I am firmly of the opinion we should have some aid from the government. We must remember there are a good many of us, and any additional expense would not be felt. What kind of a farmer would it be who would willingly aid in the expense of painting the house of his neighbor (who lives in the city), giving him a cement sidewalk and a painted picket-fence, and when he could have his farm fenced from the same purse for the asking, but would, from motives of economy, insist upon allowing his farm to lie out to the commons? Have you gained full "value received" for *your* five cents? If not, why not?

W. C. FRAZIER.

Atlantic, Ia., Nov. 4.

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

BROOD-FRAMES; WIDTH OF SPACE, ETC.

I have used brood-frames made of ⅞ lumber for some time. Two years ago I happened to get a board 1⅛ thick, and cut it into top-bars, and have used them in several hives. I find that is just exactly the thickness the bees build their combs. I space 1⅜ from center to center, and then frames are perfectly clear of brace-combs. The combs are much nicer than those on ⅞ frames, all covered with lumps, no difference how thick. I like a frame ⅜ thick, top-bar 1⅛ wide, dovetailed all round.

THE HIVE I USE.

I have improved the Simplicity hive to suit the climate. The bottom has cleats run lengthwise, projecting in front 5 inches, sloped down to take a thin alighting-board on the slope. A 3x⅜-inch board and 2 three-cornered boards are nailed on to make a Simplicity alighting-board, with slope in front. Two pieces, ⅞x⅞, rabbeted out, are nailed on each end of the bottom for the frames to rest on. The rabbet holds them so they can't shift endwise. They are closed-end frames. There is a dummy on each side, and the body

rests over all. They are wedged up, making a double-walled hive; and when you lift the body off, the frames stay there ready to be separated as you choose. The upper story is made an inch larger all round, or both ways, than the lower, and is shiplapped in the side at the lower edge; and when it is on it fits down on the lower part like a lid, and the super rests on the lower story all round, and keeps the bees entirely away from the joint. It has a bee-space under it, and it comes off easily. I use 9 brood-frames, L. size. The top or roof of this hive is shiplapped on the top story, and has a gable roof for the extractor. I use two brood-chambers with 18 frames. Section-holders work nicely on this hive.

I want to say here, that salt properly used will cure bee-paralysis. I have done it, and can do it again. It must be given to them in the unsealed honey in the combs.

Gales Creek, Ore., Oct. 14. J. H. BERRY.

PRATT HIVER AND A MISSING QUEEN.

Mr. Root:—Would it be infringing too much on your time to ask you to answer the following question? I put a Pratt hiver under a hive of bees and an empty hive underneath; and on the 25th of May about a quart of bees went into it, and, I supposed, the queen with them. I set the under hive on a new stand, giving them a frame of brood and a few empty frames, and also shook about 2 quarts of bees from the original hive into the new one in question. In a few days I found they (the new one) were starting queen-cells, indicating the absence of a queen. Yesterday, May 31st, I examined the original hive and found queen-cells with the sides eaten out, as though a queen had been destroyed by a rival, and also sealed queen-cells and a number half built, containing larvæ. What, in your opinion, does the condition of that hive indicate, taking the foregoing facts into consideration—I mean in regard to a queen. There are no eggs in either hive, but the original one has plenty of small larvæ.

Philadelphia, Pa. E. BRUBAKER.

[It would be hard to give a satisfactory answer. We would suggest that the original stock did not cast a swarm and that the surplus of bees simply *went* into the lower hive, as they will be quite sure to in the event of no swarm. The queen—there is the puzzle. She may have been superseded in the upper hive; she may have been injured in trying to pass the zinc; she may have done a dozen other things. As to the presence of a rival in the lower hive, it may have been the incoming of a queen just fertilized. Instead of going into her own hive she went into the wrong one, and, of course, commenced to seal (or, rather, unseal) the fate of her would-be rivals.]

HOUSE-FLIES; WHERE DO THEY COME FROM?

How often do we hear people complain, day after day, about the troublesome house-fly! and yet they never take the pains to find out where they are bred. Most people seem to think that flies just come — that they have no power to prevent their coming, and spend their energies the year round in trying to kill them as fast as they come. The truth is, the fly does not go far from where it is bred; and if you live on a farm, say half a mile from a neighbor, at least 95 per cent of your flies are bred in your own stable. If your horse-stable has not been cleaned for a few days, the manure, packed solid by the horses' feet, will be found full of maggots about half an inch long. They are the larvæ of the house-fly; and you may depend upon it, if they are not destroyed you will soon have a swarm of flies sufficient to keep the good wife busy for a week killing them. To prevent their breeding, clean the stable every day, and spread the manure in the sun so it will dry out quickly.

Fillmore, Cal. J. F. McINTYRE.

A DAILY HIVE RECORD OF INCREASE IN CALIFORNIA.

On the morning of April 16th I took 16 lbs. of honey out of a super of a colony of bees near my rustic seat under the shade of a juniper-tree, and placed a second super on it, as most of the combs in both hive and super were full of brood. I then opened up a daily record of increase in weight, a copy of which is given below:

Apr	Increase	May	Increase	Jun.	Increase
16	7	11	11	5	7
17	4	12	20	6	7
18	4	13	10	7	7½
19	7	14	12	8	4½
20	8½	15	10	9	4
21	4	16	6	10	6
22	1	17	12	11	5
23	1	18	12	12	3
24	2	19	18	13	4
25	5	20	21½	14	5
26	8	21	12	15	5
27	4	22	13½	16	4
28	0	23	10	17	3
29	5	24	6	18	4
30	4	25	13	19	4
May		26	16	20	2
1	8	27	13	21	2
2	12	28	15	22	1
3	17	29	17	23	2
4	10	30	10	24	2
5	10	31	8	25	3
6	10	Jun.		26	2½
7	12	1	7	27	0
8	0	2	6	28	2
9	0	3	10	29	1
10	12	4	10	30	0

I extracted as follows: April 16, 16 lbs.; April 30, 44 lbs.; May 9, 73 lbs.; May 16, 75½ lbs.; May 24, 88 lbs.; June 2, 91; June 15, 86½ lbs.; June 30, 28 lbs. Total, 502.

The record was not kept properly for a few days in May, as the scales were balanced in the morning, which gave the gross increase without taking into account the decrease in weight from night until the next morning, which varied from ½ to 4½ lbs., which will account for the 50 pounds of increase more than was extracted.

July 1st this colony was found decreasing rapidly in strength; and upon examination the queen had almost ceased laying, and capped queen-cells were found. Further examination showed young queens laying, and Sept. 12th there was found brood in five frames, with abundant stores for winter, one super having been removed July 1st. This colony of bees was selected to place on scales on account of its location, and proved to be the best one in my apiary, as my average was 200 lbs. per colony, and I made an increase of 65 colonies from 140.

Thompson, Cal., Sept. 20. J. G. COREY.

A SUGGESTION ON TRANSFERRING.

In a recent issue I noticed an article about "transferring bees at the beginning of clover, as there is less honey to transfer." May I suggest letting it swarm first, then putting it on a weak colony with second story full of frames? Put the box into the third story, with a Porter escape between, which will let the bees go down and build up the weak colony as fast as they hatch. Of course, this plan will work only where the old box hive will go into the movable-frame hive; but as a rule the old boxes will go in, or can be torn away until they will. In this way there is no brood at the end of three weeks, and also no honey except what is left — usually a few pounds. There are no bees, no honey, "no nothing," except the combs, to transfer. I use the Langstroth hive.

Another idea has gained ground—that honey is flavored with formic acid by the bees. May I suggest tasting honey in which several bees have drowned, so that their poison is in the honey? The flavor is certainly not the natural honey flavor.

I have learned another lesson—never pay in advance for sugar for winter feeding. I did it last fall, and received my barrel Dec. 3d, which delay caused the death of 75 per cent—a dozen medium and half a dozen weak colonies from 48 in the fall, in good condition. I did not want to order it till I had the cash, and then they delayed it three weeks. Cold weather set in then, and that settled them.

I have only about 600 lbs. this season; but I am building up and buying some more, and getting ready for next season, as there will be a larger acreage of clover than this year, on account of the continuous wet season. It has been another poor season here. One apiary of 150 colonies produced 200 lbs. of comb honey; another of 60 colonies brought in 600 lbs. of extracted honey. All around me for several miles report the same. I have an extra good range here, or I should have fared worse.

GEORGE E. FRADENBURG.

Kansas City, Mo., Sept 19, 1893.

[Your plan of transferring would work, except that, as soon as the box was set on the movable-frame hive with a bee-escape between, the brood would all be deserted in a very short time. It would probably chill and thus leave no chance for it to hatch.]

SWARMS UNITING AND SWARMS RETURNING; MR. MAJOR EXPLAINS.

In regard to Mr. Hutchinson's reference, on page 712, to my item on page 652, I will say that I was speaking of swarms returning to their own hive when their queens were clipped. At the same time I believe that swarms seldom unite and go into the wrong hive. I think that, on an average, not more than one-third of my bees swarm each year, and it is not often that two swarms come out together. I remember that, in 1892, two swarms came out at the same time, and united; but after hanging awhile they separated, each swarm going into its own hive; and a few days after, I had two swarms come out, fly around for awhile, then go back to their own hives without settling.

A few years ago I had three swarms in the air at once—when a nucleus hive swarmed out, and all united in one huge swarm. Of course, I had to hive them. That same year three swarms came out and united; but when they went back I thought that one of the hives got more than its share of bees. I have so few cases of two or more swarms coming out at the same time that I can not tell the rule from the exception. I only know that one swarm out alone is *sure* to go back to its own hive—at least, that has been my experience during the last ten years with clipped queens.

Cokeville, Pa., Sept. 22. JOHN MAJOR.

QUIET ROBBING—IT DOES NOT WORK.

I have read with a great deal of interest the accounts of "quiet robbing" that have appeared in GLEANINGS lately; but after trying it two seasons I have almost concluded that it can't be done successfully—at least with the bees I have. After the last extracting we stacked up the supers six high, 30 feet from the yard, closing the entrances to one bee-space, and the first warm day made me almost wish I had never seen a bee. They crowded the entrances, hung all over the front of the hives, and fought like furies. The amount of dead bees on the ground and bottom-boards far outweighed any small benefit there was in having the combs "cleared up." If you can give a word of advice in the matter, it may be of use to more than one.

We report 56½ lbs. per colony, spring count.

WM. RUSSELL.

Minnehaha Falls, Minn., Oct. 17.

[You must have failed to follow directions in some respect. You say you closed the entrance to one bee-space. In a stack of four or five hives there should be only one entrance for the lot. When you first start the bees going, apparently there will be a bad time of robbing, but it will soon quiet down. We are quite sure you will have no trouble, providing only one bee is allowed to go in and out at a time. Our own experience all this season corroborates it, as well as reports that are coming in. Dr. Miller has tried it, for instance; also Mr. Vernon Burt, years before we ever tried it. We, like yourself, could not be convinced but that it would make mischief, *because* we concluded, from the apparent uproar at the *beginning*, that the whole thing was dangerous, and therefore closed the entrance without giving the plan a test sufficiently prolonged to see how it would actually turn out; perhaps you did this. We would advise you to read our article on the subject over again very carefully, and see if you have not omitted some important detail. Others are making it work—why not you?

As a result of this stack-hive feeding, we have had brood-rearing going on quite vigorously, even up to and within this last week of October. We never had such a state of things before, and we attribute the result largely to "quiet robbing."]

WINTERING QUALITIES OF QUEENS RAISED IN THE NORTH AND SOUTH.

Will you tell us whether there is any difference in the wintering qualities of queens raised in the North and South? Some claim that a Northern queen will stand the winters best.

Anita, Ia., Oct. 17 C. H. TALBOT.

[If there is any difference in the wintering of the two kinds of queens we were not aware of it. We have had both in our apiary for many winters; and although we have made no careful comparison we have not noticed but that one would winter as well as the other.]

A NEW PLAN OF WINTERING.

Friend Root:—To those who winter on summer stands, the time has arrived to fix up the bees for the winter. I will give you my plan, which differs a little from yours. I use the Hill device and burlap as you recommend; but instead of making a cushion I take 1¼ yards of cheese-cloth, and spread it evenly on the super, and then fill it with chaff or dry sawdust; then draw the four sides of the cloth together on top of the super; put on the cover, and the work is done. I tried this plan last winter, and it worked to perfection. C. H. SHERWOOD.

Newton, N. J., Oct. 7.

I commenced keeping bees a year ago with seven colonies. In the spring I had three good colonies, and three very weak ones, having lost one entirely. I have now 16 colonies in good shape, except one queenless. I got no surplus. This immediate vicinity was so extremely dry that very little honey was secured by any one. Would you consider this report "encouraging" or "discouraging" for a beginner? I have and read the A B C of Bee Culture, Cook's Manual, and other standard works. O. F. KNISELEY.

Port Colborne, Ont., Oct. 7.

[We should consider it encouraging.]

OUR HOMES.

Thou shalt teach these words diligently unto thy children, and thou shalt talk of them when thou sittest in thine house, and when thou walkest by the way, and when thou liest down, and when thou risest up.—DEUT. 6 : 7.

A good many years ago, when there was but one little boy and one little girl in our home, a dear friend of mine, who had also settled down and started a home in another State, wrote me a letter. In this letter he urged upon me the importance of not only leading a Christian life, but of reading the Bible daily in the family. He said I would be a better man, and escape many trials and troubles, if the reading of the Scriptures were a part of every day's duties. He especially urged upon me the effect it would have upon our children, of having the father read to them from the Bible, and asking God's blessing on the home every day. This letter came to me with a peculiar significance, for this friend was a younger man than myself. I knew he was honest, and meant what he said; and I rather think I knew, too, at that time, that he was right. I did not take his advice, however, for there were good reasons why I *could not* take his advice. If I read the Bible to my children, and asked God's blessing on my home, it would require, in the first place, that I should be a different man from what I was at that time. Nevertheless, this exhortation from this friend took a deep hold on me. The letter was soon lost, and, I was going to say, forgotten—no, not forgotten. It was engraven on the tablets of my heart and memory. Oftentimes I thought of that quiet friendly appeal. It had the greater effect because he had never made any profession of Christianity that I knew of at the time. I was surprised to learn that he was a Christian. In fact, he had always been such a rollicking, reckless, outdoor sort of boy, that I could hardly imagine he could sober down his face enough to ask a blessing at the table, and lift his heart to God in prayer before a family of his own. My friend, did you ever write a letter like that to some one whom you knew would take it kindly from *you*, when perhaps he would not take it kindly from any one else? If you have, then you have at least once or twice in your life been laying up *treasures in heaven*, and may be you did not know it or think of it.

Years have passed, and I find myself not only trying to teach these same Scriptures in my own home, but sometimes I try to teach them in other homes Thank God for the recollection that I *have* tried to do so. Well, not very long ago I heard more or less of the family I have mentioned in my opening paragraph; and what kind of news do you suppose it was that I heard? Why, that this man and especial friend of mine—this one whom I had loved from my childhood up (and I loved him *more* when he urged me to be a Christian), well, it was said that this man and one of his grown-up boys—at least, the boy was pretty nearly grown up—could not *get along* together. Some friends who do not believe as we do would suggest that even his Bible-reading and prayers did not avail *very* much after all. Steady, friends. Let us look into the matter. I finally happened to meet this boy who did not get along well with his father, and he and I had a very friendly talk. He said at the outset he guessed it was all his own fault, for he owned up that he had not been a very good or obedient boy. I questioned him more closely. I believe he is now between 17 and 18. It did not seem to me as if he could be a very bad boy when he seemed so frank and honest, and so ready to admit the fault—at least the greater part of it—as his own. Like his father (is it not funny that this boy should be so *exactly* like his father in many things?)—well, like his father he was impatient of restraint—especially any sort of restraint that kept him indoors. He liked to be teaming around at something, and to have something going on. Of course, he rides a wheel; and, by the way, he won a prize among a *lot* of wheelmen, leaving them all behind, old and young. He does not like to go to school; but neither did his father. Dear me! what a time the parents did have to make that *father* get even a tolerable amount of schooling when he was a boy! The boy likes to push things. If he is set at work sweeping out a store he will have it done in about a fourth the time it would take a good smart sweeper to do it. But he would not do it *well*. And then he would make things hustle to such an extent that, very likely, some of the goods would be knocked off the shelves on to the floor, and, may be, swept out with the dust and dirt. Now, this very thing is an excellent trait—that is, this disposition to push things and get along; but it needs to be under proper restraint. I have had to do with many boys of both kinds; but I believe I would rather prefer a boy who likes to make things get along than to have one so slow that you never have the heart to charge anybody what it *cost* if you have him do the work. Both sorts of boys need careful watching and training. They need a good kind mother to show them how, with gentleness and love. Oh, yes! they also need a good kind *father* to show them how, with gentleness and love. Does that latter part describe you, my friend—that is, if you are the father of grown-up boys? May God help you if it does not. Well, I did not mean to "tell stories out of school" if I could help it; but for the sake of helping fathers and boys to get along in love and peace, I wish to tell at length of one little transaction in this friend's family.

The father and two sons have charge of a postoffice in quite a considerable town. When the father secured the office, all three were very ambitious to do the work faithfully and well. Their reports to the Postoffice Department were most carefully made out, every copper was accounted for, and the cash was balanced regularly in a most model manner. As the town was a growing one, different plans were discussed among the three for serving the great public more quickly and easily, and enabling them to do their work more expeditiously. It was a real pleasure to me to see how prompt they were in all the appointments of the office. A very early morning train made it necessary to deliver the mail quite a spell before daylight. I never heard one of them grumble about being obliged to get up at such an unseasonable hour. Their mails were always ready, and Uncle Sam was never annoyed by any delay on their part. Like most other towns there were two factions in this one, and the opposite faction was quite disposed to watch for some chance to criticise or catch the new postmaster napping. For a long while there was no chance for complaint in any direction. Finally an extensive business concern deposited some letters one afternoon, to go to a neighboring town. At just about this time the father and boys were moving the office from the back part of the store to the front, and things were necessarily more or less mixed up. They supposed, however, that every thing was carefully looked after as usual. Some time next day, however, this business man found that the letters he put in the office were not carried to the next town as they ought to have been. As the distance was not great, and some of the letters were especially impor-

tant at just that moment, he went back to the office where they were deposited, to investigate. The father and elder son declared that *all* the mail left in the office had gone forward. The man was vexed, and, in his impatience, probably charged them with criminal negligence—perhaps dishonesty—I do not know much about it. Just as they were probably getting their tempers pretty well up on both sides, the younger son came in. When the matter was referred to him he at once understood it all, and the missing letters were brought to light. Perhaps no one will ever be able to tell just *whose* fault it was. The change they were making in the office was perhaps the primary cause, and it may also be true that the younger son had disobeyed his father's orders or it would not have happened. The father was very angry. The boy, however, insisted that the father and elder son were as much to blame, or more so, than he was. Even if this were not true, it looked so to *him*. Dear parent, have you not yet discovered that boys of 18 often have queer ways of reasoning? Sometimes older people have queer ways of reasoning; but a young person is more likely to make mistakes of this sort. That is one reason why I stoutly insist that only people of mature judgment should hold important positions. I do not believe that any man should be intrusted with the running of a locomotive—at least a passenger locomotive—until he is, say, 30 or 35 years old. There may be exceptions to this; but yet men and boys, as a rule, have not learned by *experience* the terrible results that often follow from just a little forgetfulness or a little taking of risks. Just inquire into the railroad accidents and other disasters, and see if I am not about right. Well, the father, in his vexation, used a terribly hard, bitter word. The boy thought he did not deserve it.

Of course, I was anxious to establish right relations between the two, and I conversed with both father and son. The incident I have mentioned was not the only one, and each seemed to think it was rather improbable they could get along together. May be I am making a mistake in this; but, at least, so it seemed to me. The boy confessed that he had a fearful temper, and said it was of no use for him to try to control it when circumstances were particularly aggravating. When I questioned the father in regard to the kind of language he used toward his son, he admitted that it was not the kind of talk for a Christian to indulge in, and said he had never spoken so before since the time he became a Christian. But the circumstances were such that he absolutely could *not* help it. Here we had it on both sides. While each admitted he had done wrong, he seemed to settle down to the idea that he could not *help* it. What a sad, sad state of affairs! If we hadn't any Christianity or Bible, we might well be discouraged; and I had for some time been surmising where the trouble lay. What do you think? It reminded me of my story in the last issue, about the man and wife who had not been going to church at all. I may not have gotten the full particulars; but as nearly as I can make out it was something like this:

There was some difficulty about holding meetings in that new town, because there were not churches enough; and the Congregational people were, it seems, waiting a little until they could build a church; therefore they did not have any preaching. There is a Methodist and a Baptist church in the town, and they are doing excellent work too; but this father, like a good many other people, did not go very much, because he preferred his own denomination. Worst of all, the family worship had been postponed or put off. The principal reason given was, that, since they had the postoffice, somebody would come after his mail just as sure as they attempted to read and have prayers. I suggested that one of the three could take care of the office while the rest of the family held fast to the regular daily worship. But some way or other it had not been done.* The boy had some ideas of his own in regard to religion, and, no matter how earnestly I talked to him, it did not seem to change him very much. There are some features of Christianity he was quite willing to indorse and accept; and then, again, there were others that he did not, to use a slang phrase, "take very much stock in." Have any of you ever heard boys talk that way before? Now, friends, do not blame the boys, even though they have some queer ways of reasoning, and draw some erroneous conclusions. I think there is a good deal of common sense in this young boy sense, after all. The boy's convictions, and his notions as to how a Christian should deport himself, are not so very far out of the way. If that father had held fast to the spirit that prompted him to send me that letter years ago, I feel pretty sure there would not have been any serious disagreement between himself and his eighteen-year-old boy. Oh, what a beautiful thing it is to see father and son, or father and *sons*, if you choose, working harmoniously together! How I do love to hear the boys speak of the father's business as *our* business! how I do love to see them act and talk as though they were *partners* in the concern—as though the father were simply an older brother who rather took the lead in directing affairs! and how I do love to see boys tender, careful, and respectful of the father's feelings, and the father, in turn, tender and careful of the *boys'* feelings! A boy who is associated with his father in this way plans and thinks about the business, and suggests improvements. Sometimes his plans are not just in harmony with his father's plans; but they may be good ones after all. A smart boy likes to invent and to devise new things and new ways; and what father does not like to see him do so? Sometimes, of course, the boy makes a blunder, and perhaps his ideas are crude and impracticable. But suppose they are; and suppose, too, he takes a little too much liberty, and makes a muss of things. Does not your boy do that now and then? But you do not lay it up against him, do you, my friend? Why, no, of course not. Perhaps you sometimes remonstrate because he went ahead without asking advice a little more; but if your relations with each other are right, these things are easily adjusted.

Now a word about disobeying a parent. There are a good many kinds of disobedience If a young man wanted to go off with a crowd of intemperate companions, the father would be justified in forbidding his going. Of course, the matter should be talked over fully. If the boy disobeyed after a plain command, the parent would be at fault if he let the matter drop without doing something. If, however, the parent gave plain directions about doing a certain piece of work, and the boy should think he had a better plan, and therefore disobey, even though disaster followed, as the boy's *intentions* were right he should not be punished—at least, the punishment should be light. It makes a vast difference whether the boy *means* well in his disobedience, or whether he

*The postoffice had been a great boon to them. I think it quite likely they asked God to help them get it, and thanked him for it after it came; but the very blessing they craved had in time come to be the very thing that led them to forget their daily worship.

does not. I very much prefer to have a boy, or even a hired man, who disobeys orders when circumstances seem to justify so doing. I have been exceedingly vexed with a certain kind of people who go on and obey orders, when they can see plainly it is going to bring disaster and loss. Of course, the hired man or boy does not *always* know what to do. It depends on who the boss is. He is likely to get scolded either way if he has a fault-finding employer or father. Where one does the best he can, according to his knowledge and ability, but after all errs in judgment, he should certainly be dealt with very leniently. May God help *me* to practice exactly what I am preaching *now;* and I certainly *will* try harder to remember what I have said right here.

Now a word about admitting you can not help doing certain things when you are "real mad." I remember a person who admitted that it is very ungentlemanly and wrong to swear; but he said that, when he was real mad, he could not help it. Let us look into this a little. A good many people seem to think it a very light thing to admit they do not have command of themselves at certain times and under certain circumstances. Suppose somebody should tell you that he had spells of being crazy, and that, during these crazy spells, he might swear or fight or commit murder, but that there was no help for it. By the way, I have in years past, as you know, made this matter of insanity a study. I have often wondered why crazy people are invariably so exceedingly provoking. If one's mind is unhinged, so that he is not at all responsible for what he does, why should he seem to take delight in exasperating everybody around him beyond measure? I have sometimes thought that these people have a satanic ingenuity in devising ways to vex their best friends; and I have sometimes decided that crazy and idiotic people are at least *partly* responsible. There are many phases of insanity. Sometimes it seems hard to tell whether the person is crazy or only tremendously ugly. Well, of late I have been wondering whether one who has symptoms of insanity could not, by a tremendous mental effort, hold it back—at least a part of it—or keep it in check. I have wondered, too, whether God would not help those who are really anxious to keep back incipient insanity. And, by the way, if I am correct, one of the writers of some of our most beautiful hymns, during most of his life, battled and prayed against this very thing. And, finally, what is an unruly temper, after all, but a kind of insanity—a kind of madness that grows fearfully if we give it sway? Do not, I beg of you, O my sister or brother, say *again*, if you ever have been guilty of saying it, that you can not *help* giving way to temper under certain circumstances. The mayor of Chicago has just been foully murdered. Was the assassin crazy, or was he simply ugly? Are anarchists crazy, or are they simply individuals who have gotten so very far away from Christ's teachings that they take delight in trampling law, order, and decency, and *common sense* in regard to the rights of others, under foot?

Now, then, my friend, if you have at times in in your life felt afraid insanity was lurking near, please believe me when I tell you that the best remedy in the whole wide world for every thing of this sort is to make God's holy word your daily companion and guide; and if you are a father or a mother, please believe me when I tell you that nothing in this world will hold together the family circle in loving harmony as will the sentiment conveyed in the little text I started out with.

Thou shalt teach these words diligently unto thy children, and thou shalt talk of them when thou sittest in thine house, and when thou walkest by the way, and when thou liest down, and when thou risest up.

NOTES OF TRAVEL.

ON THE WHEEL.

My cousin, Wilbur Fenn, notified me the first week in November that he was digging that nine acres of Monroe Seedling potatoes; and on Monday, Nov. 6, as it was a beautiful Indian-summer day, I started out. Was there ever any recreation invented like the pleasures we get from a wheel when we have such beautiful weather in November? My first drink of delicious spring water was a little beyond Sharon; and there I got an idea of a roadside watering-trough. This trough was but an ordinary one—made, I think, of stone—but the water poured into it from a ¾-inch pipe standing at an angle of 45 degrees. The stream went up into the air perhaps three or four feet, and then came over in a beautiful curve, dropping in the center of the trough. Its splashing and spattering on that bright morning seemed to me a thing of beauty and a joy for ever. As it is in the vicinity of Spruce Run, the water was pure and soft. The owner had taken the precaution to have a part of the trough inside of his own dooryard; and on the edge of the trough was a rather nice drinking-cup. I took it to be originally silver-plated, but I may be mistaken. It bore the marks of use; and I am inclined to think, from the simple fact that it was inside of the dooryard, nobody had seen fit to carry it away. Another thing, the proprietor had made careful provision for the overflow, so that it should not make a sloppy and muddy place outside of the gate. Now, I believe in this kind of religion—furnishing pure water for the thirsty traveler; and I rather think everbody believes in it. Let us have more of it. Here is one common basis on which we can all unite. Perhaps the saloon-keeper might object; but I hardly think that even he would. Look here, friends; are there any saloon-keepers who take GLEANINGS? If so, and we have been too severe on them, or even if they think so, I wish they would speak out, for I will publish any thing they think fit to send us.

In a little more time my wheel brought me to Mr. Atwood's celery-farm. I was anxious to know whether he had yet put his celery into winter quarters. Sure enough, it was right out there in the open swamp, as bright and green as it was in August—yes, brighter and ranker; for he has now a beautiful stream of pure running water, like that from the trough I had just visited. He has succeeded, too, by a series of gates and dams, so that this bright stream of running water can be made to flood any part of his whole celery-farm if need be. I tell you, when I saw how our Creston neighbors had worked with a steam-boiler and injector, so that they might run water in a hose along the rows of plants, I thought Mr. Atwood ought to be a happy man, and I rather think he is. There is one thing, however, he did not feel very happy about that bright morning. His White Plume celery is not all disposed of. Some was out in the field; but the greater part of it was stored in an immense celery-house. This house has a roof of boards low down, with doors at each end, and ventilators about every 20 feet along the ridge. Then, in order to keep the celery from wilting, he raised the water so the ground was quite moist inside of the building. Well, the White Plume did not take very kindly to this plan of being housed. I should

say its feet were too damp, and that it did not have air enough. In fact, he had packed it tight together, leaving only one main alley through the center, and it was rotting to some extent. The tops were wilting at the same time. It looked a little like blight. I do not know but the frost was a little too severe for it before it was put inside; but this is certainly true—that White Plume celery has not the vitality and constitution of the dark green and the red celeries. Mr. Atwood thought, however, it would be all right the way he put it up for storing, for the fall market; and he is now going to send wagons around from house to house through the great city of Akron, and close it out. At both ends of the building were the Giant Pascal celery, which was keeping just beautifully, and seemed to actually enjoy the dampness and lack of sunlight. Friend Atwood declares he has always had better luck in leaving celery out until quite late. The greater part of his crop, of course, is fixed for winter right in the muck where it grows. He moves six or eight rows up close together, banks the soft black earth up all around them, and, finally, almost clear over them, and they stand unharmed right outdoors. This soft muck will keep out frost, when it is light and fine, almost as well as stable manure; and during even the most severe winter weather there is no trouble in taking it out of the trenches after you break through the crust of frost that forms on the outside.

I found cousin Wilbur just where I wanted to see him. He was out in that nine-acre field of Monroe Seedling potatoes. Four horses were moving the Hoover digger, one man driving, with a boy following after to wait on the driver, throw potatoes out of the way that might be covered when they came back, and, if I recollect, six men were picking the potatoes up. I expected something of those potatoes that had not seen a bug or a bit of blight; and as they are on upland, and rather sandy soil, they had kept right on growing almost into November. The yield was about 200 bushels per acre, of the finest looking potatoes I ever saw spread out in the field. I was astonished to find almost all of them of a nice table size—very few small ones, and almost no prongy potatoes, or those with a little potato growing out at one side. I suppose the variety and his method of management had much to do with it. The ground was just loamy enough so the potatoes tumbled out bright and clean and handsome. I fell in love with them at once. Now, here is a point that I want you to observe: When I came into the field every thing was going on like clockwork, and those potatoes were being deposited in his nice cellar in almost a steady stream; but, of course, I had to stop and ask questions. Pretty soon the team stopped, and could not go on unless the "boss of the ranch" gave directions. Perhaps I might as well tell you that I got to bantering him for a carload of potatoes, and, of course, he could not very well neglect a chance to sell a carload, even before they were taken into the cellar. But there were several details to be arranged about shipping, furnishing boxes to put them in, etc.; and in a very few minutes the whole gang of workmen came to a standstill. The moral is, be careful how you bother a man when he is bossing a job that requires half a dozen or more expert helpers. I told him it was too bad, and so I made my visit quite a hurried one.

One thing that threw him out occasionally, was, they did not have quite enough potato-boxes. I told you six men were picking up potatoes. As fast as they get a load the team comes around and the potatoes are set on the wagon, and taken directly to the cellar. You can do this with a crop of potatoes that are just ready to dig by the first of November. The air is cool then, the potatoes are cool, and friend Fenn assures me that he piles them right into the cellar, even four feet deep. Under such circumstances he carries them through until the following May, or even up into June, with scarcely a sprout and not a particle of wilting. I saw the 100 bushels that he planted in this field the last day of May.

Before I started for home we looked into the cellar, and saw how he unloaded. An inclined plane made of strips of wood runs from the wagon clear down to the bottom of the cellar. The bushel boxes are set on this inclined plane, on a sort of carrier. The man with the wagon lets this down with a rope. Another one in the cellar bottom pours them on to the pile. The boxes are pulled up with the same arrangement, and, without any lifting or lugging, the load is disposed of very quickly.

Farming doesn't pay! Doesn't it, though? Friend Fenn is getting more for the potatoes that grew on this land than the land itself would sell for. What do you think of that—paying for a farm with the proceeds from a single season? and a regular farm crop at that! You may ask about the expense of growing this crop. Well, it was not very expensive. The only manure was clover and timothy—that is, if I am correct; and the cultivation was all done by horse power, the driver riding on the cultivator. The potatoes were also planted and dug by horse power. I do not know what he values his farm at; but I do know that, within less than a mile of his home, there is land that can be bought for $40.00 an acre—may be less than that; and what he is doing is on a farm that was called, only a few years ago, a poor rundown farm, and not of very much account.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

EATING POISONOUS MUSHROOMS.

A HINT AND A CAUTION.

Mr. Root:—In Oct. 1st GLEANINGS you say, "I do not see how people can be poisoned unless they eat very freely of the poisonous kind." Now, on principle I should not wish to interfere with anybody's orthodoxy—especially yours; but about mushrooms, that is different. I am interested in them for two reasons: First, I like them—that is, the wholesome ones; and, second, I have been poisoned with their imitation once, which was certainly once too often. Shall I tell you how it was?

I was living at the time in a village suburb of Chicago—a university town—perhaps three-fourths of a mile from the postoffice. I was, at the time, alone. One morning I wished, for some reason, to reach the early post, and went before breakfast. My way lay through University Campus, part of which was well shaded with forest-trees; and as I returned I spied, as I thought, a group of mushrooms, and said to myself, "How good these would be with my breakfast!" Suiting action to thought, I gathered three or four. When my breakfast was about ready I peeled two of my mushrooms, placed them on a hot pan, and put a trifle of butter and pepper and salt into the cup of each, and left them to cook, anticipating a dish fit for the gods; but, alas! it proved a dish certainly fit for none but gods. Before I had tasted breakfast, a neighbor came in, with whom I

offered to share my dainties, but I said I didn't know but they might be poisonous. She thanked me, but said she had "no hankering for them." Whether the doubt hindered me, I do not know; but I sipped a little of the broth, bit the fleshy part of one, but swallowed none of it. Some one tapped at the door, and I answered the call. While I stood a moment at the door I felt ill, but thought it was only from standing. However, I ate no more mushrooms that morning. I was going to work with the bees; and almost as soon as I was alone I raised a cover; but before I could do much more I was so sick that I went to the house for repairs. I returned to the yard, closed up the hive, and, again feeling very sick, went back to my room, having first told my nearest neighbor that I was glad she had not "hankered" for my mushrooms, for I was sick. I grew so much worse that I concluded I would write a note to the doctor; but before I was ready to write I was too ill to do so. A young schoolgirl friend came in to take my note and find a messenger for me. I said to her, "Just take those two mushrooms that I have not cooked, and show the doctor what I had for breakfast. Tell him I am sick — to come, or send me some remedy, as he thinks necessary." That was the longest speech I made that day. My neighbors, one and another, were with me all day, and at one time several were there at one time. They wanted me to make my will. But I said, "The boys will not quarrel over what little I have; and if I have poisoned myself with mushrooms, I'll never let father know." I was reminded by the friend who had "no hankering for them" that I should not have that to do. Well, I was cold, cold, cold, all through. I did not know but I should die. Well, probably thanks to my good neighbors and the doctor, I could eat a dish of mushrooms to-night—if they were the approved sort; but if I were not sure, I should prefer to first try them on a mad dog, or something that had to be killed.

I fear the difference can not always be well marked. I had gathered mushrooms from my childhood, and had reason to feel ashamed not to recognize the false from the true. "Mushrooms proper to be used in cooking grow in open pasture-land; for those that grow near or under trees are poisonous." So says *Home and Health*, and the reference is doubtless to the variety you describe; but I have found truffles growing in woods, and some edible varieties even grow on trees. A pamphlet published by the Agricultural Department, Washington, which I presume could be had for the asking, gives very good illustrated descriptions of several varieties. I have read it, but have not now access to it.

Tiffin, O., Oct. 10. RUTH MOORE.

[My good friend, I read your article through with almost breathless interest. I wanted to have you tell us clearly and plainly whether one could not tell at first taste, even by the *broth*, that the mushroom is not of the edible kind. If the poisonous mushroom, when cooked and seasoned, tastes like the edible, and at the same time such dire effects follow as you describe, then indeed there is danger ahead. I am very glad that the government has been so thoughtful as to send out a bulletin on this subject, and I will try to get it at once. My principal test has been that the mushroom should be light red or pink underneath — that is, when it is small, before the pink has turned to a dark brown or black; and I should like to know whether there is any poisonous variety having this pink color on the under side. The toadstools that grow out of manure-heaps, or in the woods, are always perfectly white on the under side as well as on top.]

EVERBEARING RASPBERRIES IN GENERAL.

Dear Mr. Root:—I have just been reading what you have to say about the new everbearing Gault raspberry; and referring to the May number, page 402, I find you telling friend Allen, of Salisbury, Md., "Don't let a thing be boomed—at least editorially—until some experiment station has tried it, and declares it possesses merit." As I have no faith in everbearing raspberries except under forced or artificial conditions, I should like to look into the causes that lead to its productiveness. What you say is very favorable to the fact; but, did you ask Mr. Gault some important questions? He seems to have a secret (?) as to propagation. May be he might tell you, as I can, how to make most of our raspberry-bushes bear twice and bear big berries. As for his secret, he has none with people who have already practiced both stem and root cuttings with raspberry culture; and if his plants are very distant from others he might propagate also by seed-planting. The trouble about most people, when they find small fruits fruiting out of season, is, that they fail to look into causes. Ten or twelve years ago my sister, who lives on the "Eastern Shore" of Maryland, called my attention to some raspberries which she had for dessert during September, saying that they bore every year from June till October. My fondness for horticulture soon brought me to the spot where they grew. The plants were on the west side of a close-boarded fence. It did not take me a minute to get my chin over that fence and find the chief cause of their bearing; for, close to it, ran a gutter which carried off the wash-water from a pump up the street. I did not take up any of these plants, which were of the Brandywine sort, for transplanting, knowing that, without half shade and great moisture, they would not differ from other raspberry-bushes, because they could not. Mr. Gault's bushes, you will find when the hot suns come on, will quit, unless he shades and waters, which won't pay. As for fall bearing we have several sorts that will do that without urging. The English have many of the "twice-bearing" sorts. The Antwerps do best with me, but they have to have special cultivation, just as I believe Mr. Gault's must have.

Now, instead of sending to an experiment station, suppose you get six of Mr. Gault's new prolifics, and plant, alongside of them, six Antwerps, or Cuthberts, for that matter, and give the usual out-field cultivation, and notice whether there is any difference. I venture to say that there will be none, after the second year at least. Should you wish to get a succession of fruit, treat them again alike, as I suggest, and note the difference, if any. In the first experiment, give them no more water than the heavens afford, and no pruning. In the second experiment, cut down all of the suckers and shoots within two or three inches of the ground, and both Mr. Gault's and yours will bear in the fall. If you desire the fruit to be unusually large, cut down to the ground all suckers, leaving a strong shoot or two.

The impossible nowadays seems always happening, so Mr. Gault may have a berry with a greater tendency to fruit successively than any now in cultivation; but I don't believe it will fruit during the drouthy months. Raspberries fruit on old wood; and yet, if the old wood (growth of the preceding year) is cut down to two or three inches from the ground, from this stock will spring shoots that will fruit in June; and yet you seem to claim this as a feature (see article) of the "Gault Perpetual," when it is common to other sorts, and makes me think that, notwithstanding your knowledge of small

fruits, friend Gault can give you a point or two about them. ARTHUR T. GOLDSBOROUGH.
Wesley Heights, D. C., Oct. 22.

[Thanks for your hints, friend G.; but you are certainly wrong in thinking that Mr. Gault gave his plants water or extra quantities of manure. His old plantation, with tall canes, was on pretty rich garden ground, and he gave them some water which he drew in barrels; but his new plantation, and by far the largest plot, had no water whatever during the most severe drouth that I can remember, and the ground has not been manured lately, for he had potatoes between the rows, and he objected to manure because it made his potatoes scabby. The ground certainly was not nearly as good as my market-garden ground, and yet every little plant seemed bent on bearing fruit almost as soon as it was out of the ground. I am to have plants enough to give them a good trial in the spring. If the plant does as well in other places as it does on friend Gault's farm, it seems to me it must be a wonder among berry-plants. Yes, I remember what I said about the experiment stations taking hold of new things, and I believe they are to try this next season. At present I have not a plant for sale, and I think friend Gault has sold all he has to spare for next spring.]

SHALLOTS.

Well, what are shallots? All I can tell you is, that the Cleveland Nursery Co., of Rio Vista, Va., say in their price list: "These are a great multiplying variety. This onion is suitable for bunching after the winter onions—often 15 to 25 onions from one, but they do not run to top-sets. This, no doubt, is a valuable onion to many market-gardeners for spring bunching. They need planting one foot apart in the row, and rows about 18 inches apart. They need plenty of room." When shall we ever know all about all the different kinds of onions? Why not call this a potato onion? I suppose because it never gets large, and is suitable only for bunching—probably something like the Egyptian; but then, again, we read that they do not run to top-sets; therefore the only means of propagation is by dividing or multiplying. This, certainly, would be a desideratum. So far I have not seen a potato-onion or a White Multiplier run up to seed.

OTHER KINDS OF ONIONS.

I wish there were a book in the world that would give us a full description and directions for cultivation of all the onions in the world—or, say, of all the onions in the United States if the world is too large; then we could tell something where we are. I do not know but I would go a thousand miles to see an onion-garden where all kinds of onions were growing; and then this onion-garden could furnish us seeds and multipliers and potato onions to plant; and I do believe they could manage, by some hook or crook, so that they need not charge us $5.00 a bushel for onions and sets. Why, it is ridiculous. Potato onions can certainly be grown at a profit for a dollar a bushel, and I think the white ones might be grown for $1.50 any way. I do not know about shallots. Egyptian or winter onion-sets can be grown for $1.50 per bushel, easily; and for an immediate order I will sell them at that price, or bottom onions (same variety) for $1.00 a bushel. These latter are the best thing I know of to put in greenhouses and cold-frames.

Now, then, have I got hold of all the different kinds of onions grown? When I was a boy, some English friends of mine had something in the onion line that they brought over from England and they called them "chives." They grew in great clumps; and when they wanted some for the table they just sliced the tops off with a pair of shears. The more they sliced them off, the more they grew. Do any of our readers know any thing about chives, and will they please mail me a root or two? And, by the way, when my creek-bottom ground was cleared up, there was a very pretty wild onion found. It made little bulbs about as large as onion-sets, and it also produced seed on top. Somebody told me these were garlics. Is garlic an onion? I remember one day our butcher said the only kind of bologna he had on hand was some flavored with garlic. I did not like the garlic kind; but he said it was because I was not brought up right. May be friend Dadant would say I was not "built" that way. Now, before I write that onion-book you see I want to know all about onions.

A great many are asking lately about growing onions under glass. If you have a hot-bed, cold-frame, or greenhouse, it is the simplest thing in the world to grow onions under glass; and if you have any old onions that are rotting and sprouting to such an extent that they will not sell for any thing, just put them in rich dirt as close together as you can set them, and with a little dirt between under your greenhouse-benches, or right in your hot-bed or cold-frame. After they have made long green shoots, peel off the outside so they look white, like nicely bleached celery. Tie them up in bunches, and they will sell tiptop almost any time in winter. Along in January or February, when people are hungry for green stuff, we often get 5 cents for ¼ lb. Now, I suppose shallots, potato onions, multipliers, and may be chives, could be thus forced in the same way. Oh, yes! in growing onion-plants for sale last February they got too rank and tall in that new greenhouse, and we cut the tops off with shears, and sold them around town by the peck and half-bushel. Some of them were sheared off twice. Now, what do *you* know about onions?

HANDLING SASHES.

When Huber was only nine years old he often used to help me handle the sashes on the plant-beds. Frequently the air would turn frosty Sunday evening, when the men were all away. Sometimes, in laying the sash down on the edges of the beds, he would get his fingers pinched. Boys—especially small boys—have to learn to take care of these soft pink fingers. I wonder whether the father always has it in mind to protect these little fingers and toes, and endeavor to avoid pinching them and giving them pain. The mother does, as we all know; but I think that *fathers*, ofttimes, should be a little more *motherly*. The first I knew, Huber was handling sash quite rapidly, without even letting a finger get a brush. Boy as he was, he had invented a plan for dropping them. The plan has been adopted by all of our men since then; and as some of you handle sashes, I think I will tell you about it.

Suppose the sashes are piled up at the end of a long bed. You commence at one end—two of you—and lay the first sash in place; then you take the next one, and drop one edge so as to have it come close up against the first sash already on the bed. Now, when you lay down the opposite edge, if the sash should not be any longer than the width of the bed, one of you may get a finger pinched. Huber's plan is to cross the free hand over the one holding the corner of the sash, and let the last edge down gently by placing the free hand along the *side* of the sash instead of under the end. The side, you know, lies over the edge of the bed, and

touches nothing; so, of course, you can not pinch your fingers.

TERRY'S NEW BOOK—OUR FARMING.

When I mentioned this book in the last issue I had not yet seen a copy. I presume the publishers forgot to send me one, so the first I saw of one was when we got our first hundred copies by freight. It is a book of 367 large-sized pages, beautifully illustrated with half-tone and wood engravings. First we have a most excellent half-tone picture of Terry himself. Almost any one would pronounce it a beautiful photograph. On the cover we read in large gilt letters, "Our Farming;" right under it, in smaller type, "How we made a rundown farm bring both profit and pleasure." The book is really a story; and to my mind it is the most entertaining story—that is, the most entertaining story with a moral to it—that I have ever read in my life. He goes into the full details of how he and his wife, with two little children, struggled with poverty in their earlier days. He tells how he learned to be careful and sharp by making foolish investments when he was a boy, and finally found himself $3700 in debt, and the owner of a poor rundown farm, only thirty or forty acres of it being fit for much if any thing. Then he tells how he worked up. A great many say they can not do any thing for lack of capital. Friend Terry tells us (and I believe it from the bottom of my heart, and have done so for years), that lack of capital is a help to any good man or good boy, rather than the reverse. There are now stored around my home, in the various out-buildings, tools and implements that cost me a good deal of money, that never would have been purchased if I had always been so situated that I could not have a thing until I needed it "bad." Terry and his good wife learned in early days not to purchase a thing until they needed it very much. After they got it, as a matter of course they took good care of it. His tools have never been left out in the rain. He thinks so much of them, and looks after them so carefully, he rarely if ever has expensive breakdowns.

This book is not only entertaining, but the writer has the happy faculty of getting you interested in such humdrum occupations as cleaning the stables; nailing battens on the stables to keep the stock warm; underdraining the wet places about the house and farm; saving doctor-bills by avoiding infection, and, in short, making a locality exceedingly healthy where the former residents had died from sickness and fevers until the doctor felt almost ashamed to be seen so much in that one neighborhood. The book is the most exceedingly practical of any thing I ever got hold of. There is not a sentence in it that is useless, and it goes down into the minute details, explaining how certain conclusions were arrived at, and telling of the success he and his wife achieved after repeated failures. It was himself and his wife working together that did it all; and even now all his writings are submitted to her before they go into print. Such a book could never have been written without the aid of a careful woman to supplement and put the finishing touches on the work of such a man as Terry. I feared at first it would be too much of a repetition of the books we have already published for him; but to my surprise I find it is not. While he goes over the same ground, he throws on each subject different sidelights, making it a valuable supplement to all his previous works, and bringing his experiments clear up to the present date. In short, if any reader of GLEANINGS purchases this book, and says it is not worth what he pays for it, he may send the book back, and we will return him his money.

Books by T. B. Terry and Others.

The long winter evenings bring extra time for reading. A part of this time could not be more profitably spent than in reading the following rural hand-books which we send by mail at the uniform price of 40c each. The new edition of the A B C of Potato Culture, rewritten this season by T. B. Terry, will be completed in December. For 10c extra we will send at once a copy of the old edition and the new also when finished.

The A B C of Potato Culture. Paper, 220 pages, 4x5, illustrated. This is T. B. Terry's first and most masterly work. The book has had a large sale, and has been reprinted in foreign languages. The second edition, reset and almost entirely rewritten, is just issued. When we are thoroughly conversant with friend Terry's system of raising potatoes, we shall be ready to handle almost any farm crop successfully. Price 40c, postpaid.

The A B C of Strawberry Culture. Paper, 150 pages, fully illustrated. This is Terry's latest *small* book, and has received some very high words of praise. Who among rural people does not have a little garden-patch? If you would learn to raise in it that most luscious of all fruit, the strawberry, with the best results, you can not be without this little book. Even if you don't grow strawberries you will be the better for reading it.

Tile Drainage. By W. I. Chamberlain. This is a valuable companion to our other rural books. It embraces the experience of forty years of one of our foremost practical agriculturists, who has laid with his own hands over 15 miles of tile. Paper, 150 pages, illustrated. Price 40c, postpaid.

Winter Care of Horses and Cattle. This is friend Terry's second book in regard to farm matters; but it is so intimately connected with his potato book that it reads almost like a sequel to it. If you have only a horse or a cow, I think it will pay you to invest in the book. It has 44 pages, 7x10, illustrated. Price 40c, postpaid.

Maple Sugar and the Sugar-Bush. By A. J. Cook. Paper, 44 pages, 7x10, illustrated. This is most valuable to all who are interested in the product of our sugar maples. No one who makes maple sugar or syrup should be without it. If you don't make maple syrup you may want to know how it is made, and how to judge of a good article when you buy it. Price 40c, postpaid.

Tomato Culture. In three parts. By J. W. Day, D. Cummins, and A. I. Root. Paper, 150 pages, illustrated. A most valuable treatise embracing field culture, forcing under glass, and raising plants for market. Valuable to any one raising garden stuff of any kind, aside from tomatoes. Price 40c, postpaid.

A B C of Carp Culture. In paper covers, illustrated. This is a work of 70 pages, 7x10, written by Geo. Finley and A. I. Root, and the best authority on the subject of carp culture yet in print. The rearing of carp is a pleasant and profitable amusement. This book will tell you all about it. Price 40c.

Any one of above books sent free for one new subscription with your own renewal and $2.00, the new subscriber to receive GLEANINGS the rest of this year and all of 1894.

Terry's First Large-Sized Book.

We have just received 100 copies of "Our Farming," from Wm. Henry Maule. Price, by mail, postpaid, $2.00. If ordered by express or freight with other goods, you may deduct the postage, 15c.; or we will send the book by mail, postpaid, with GLEANINGS, for $2.50.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
Illustrated SEMI-MONTHLY
36 PAGES 7×10
1.00 PER YEAR

Ye fathers, provoke not your children to wrath.—EPH. 6:4.

WE (that is, the junior part of us) were not present during the first day's sessions of the convention. We are, therefore, indebted to Bro. Holtermann, of the *Canadian Bee Journal*, for a part of the material to make up the report in another column.

THE Crane smoker, as it was improved some two months ago, has proven to be almost faultless, so far as the perfect working of the valve is concerned. The problem of keeping smoke out of the bellows, and of making an inclosed and a strong blast, is solved in the Crane principle.

ONE of our men, with a delicate micrometer (an instrument for measuring thousandths and ten thousandths of an inch), is now measuring the base of foundation that has been drawn out into comb. The results are quite interesting; and as the work is being done under the instruction of the Michigan Apicultural Station, the report of these results will be issued from that station in due time.

WE have just had a delightful visit from one of the oldest manufacturers and dealers in bee-keepers' supplies in England—Mr. S. J. Baldwin, of Bromley, Kent, England. He had been to the World's Fair. After making a short tour to Wisconsin to see the G. B. Lewis Co., he made a bee-line to Medina. We found our friend to be exceedingly well posted in all that pertains to bees. He is a correspondent of the *British Bee Journal*, a lecturer, and an expert. "Expert" in England means more than it does here. Such a one is not only expert in the ordinary sense of the word, but is appointed, if we understand the matter, by the British Bee-keepers' Association to deliver lectures in various portions of the United Kingdom, and to perform various operations in the presence of those who are seeking instructions. Mr. B. enjoys the distinction of making an exceedingly fine article of foundation, and has taken many medals at the shows for this and other supplies. He will visit, before his return, the establishment of W. T. Falconer & Co., and thence proceed homeward.

HONEY ON A STICK.

SOME time ago, as our readers will remember, a short item appeared in our columns, entitled "Honey on a Stick." Our correspondent told how a race of small bees placed the comb around a small twig. This was done so nicely by the bees that these sticks of honey were sold in the markets. At the time this item appeared we had some doubts about the existence of such an article; but Mr. Benton assured us that the facts as stated were essentially correct; and in proof he showed us a sample, not of honey on a stick, but a comb encircling a small stick. The latter appeared to be about $\frac{3}{16}$ of an inch in diameter; and the comb encircling it, as nearly as we recollect, about ¾ of an inch—the length of the whole being some 4 inches, the stick projecting at one end, leaving a convenient handle. The manner of eating the honey would be just about as you would pick meat off a chicken-leg, holding the same in the fingers in the good old way.

KEEPING TWO QUEENS IN A HIVE; SOME OF THE POSSIBILITIES.

THE question of keeping two queens in a hive, for the purpose of ensuring a tremendous force of bees, so that either swarming may be prevented or larger honey crops secured, is a very important one. While the possibilities along this line have been hinted at in the past, they have never been thoroughly discussed. We should like to have those of our readers, who have had experience along the lines pointed out by friends Mitchell and Golden, tell us what they know, and whether it is possible and practicable to keep two queens in a hive at *all* seasons of the year.

Assuming that it is practicable, more brood can be reared in a given time, and consequently the colony can increase more rapidly; in other words, the two queens, if only average layers, would give all the advantages secured from a queen that was extra prolific. If we can not always get individual queens up to this high standard, perhaps it is possible to make *two* queens do the work of one extra good one. There are other possibilities, such as the almost absolute immunity from unexpected queenlessness, and the rearing of an extra queen in the hive while the old queen-mother goes on doing her duty.

HONEY-EXHIBITS AT THE WORLD'S FAIR.

THERE has been considerable discussion in several of the bee-journals as to which honey-exhibit at the World's Fair was the largest or finest. With some exceptions we could not see that any one State *greatly* excelled any other. New York had the *largest amount* of honey on display; but in our estimation it was not as attractive as those of Michigan, Ohio, or Canada. Of course, we *might* be biased in our opinion regarding our own State; but, observe this: It was with R. L. Taylor that we were looking over the various State honey-exhibits. Coming to a certain one, we remarked that we thought *that* exhibit was a little bit the finest of any of them. We supposed that we were speaking of the display of honey from Michigan; but, lo and behold! it was from Ohio. We stood a little bit at one side, and in a position where we could not see the lettering indicating the State the exhibit was from. For the consolation of our Michigan friends, we may say that their comb honey itself, in our estimation, was the best filled out; indeed, as nice a lot as we ever saw on exhibition. It came from the apiary of R. L. Taylor.

Just about as we were leaving Agricultural Building for the last time we learned that several of the foreign countries had honey-exhibits. We did not happen to see any, except that from the British Bee-keepers' Association, and that indeed was fine, and did great credit to our English cousins.

THE SMALL ATTENDANCE AT OUR BEE-CONVENTIONS; HOW THEY MAY BE INCREASED.

ONE reason for the small attendance at some of the meetings of the N. A. B. K. A., and the consequent failure to secure reduced rates of 1⅓ fare, is because a bee-convention is hardly sufficient to draw the far-away bee-keeper, considering the great expense of travel; and, to be honest about it, there really is not enough in the average bee-convention to pay one, ordinarily, to come several hundred miles; and then, too, he will get the very best part of the proceedings in the reports that appear in the bee-journals. It is true, he misses the pleasant handshaking, and face-to-face personal acquaintanceship; but he feels that he must forego all this. Taking all these things into consideration, we have always maintained that

our conventions should be held at the time of some other meeting—for instance, a farmers' institute, or, perhaps better, the time of some other big gathering, such as the G. A. R. reunions, when a large number of people will be present anyhow, and reduced rates will be assured independently of the bee convention. The last meeting of the N. A. B. K. A. was held at the World's Fair, and the result was the largest attendence the association has ever had. The bee-keeper reasoned, probably, that, if he could not afford to go several hundred miles to attend the *convention*, he could afford to go to the *fair*, because that alone would fully warrant him in the expense of the journey; that, furthermore, if he could afford to go to the World's Fair he could go to the convention of the N. A. B. K. A. also—in fact, kill two birds with one stone. The very large attendance—the best in the history of the association—at the last convention proves that this is about the way the average bee-keeper views the situation. This being the case, does it not behoove the executive committee to take pains to set the dates at the same time when reduced rates will be assured, and when people generally—particularly bee-keepers—will have other interests as well as the convention to draw them? But some say that the other interests spoil the convention because the bee-keepers will be running from one to the other. While we admit this has been true to a *slight degree*, the large attendance *many times over* makes up for it; and as to the last meeting at the World's Fair, no one can say there was any annoyance from bee-keepers coming and going from the fair. Now, then, if we may be permitted to make any suggestions, we would advise that the date of the next meeting at St. Joseph be made simultaneous or nearly so with some large gathering that will take place during the next twelve months in that city. Whether it be a big agricultural fair, a G. A. R. reunion, or a farmers' institute, we would by all means arrange to have the meeting at some such time; then the question of reduced rates will not remain uncertain, and the bee-keeper will feel that he can afford to go because of the other good things *outside* of beedom that he will get. For instance, if it be a farmers' institute—and most bee-keepers are farmers—the meeting could be held a day or so in advance of or following that institute. Before or after the convention, as the case may be, he can attend the institute, and thus feel that he has an additional incentive for going so many miles. The attendance at the N. A. B. K. A. at Washington a year ago was very small. There was some talk of having it held during the G. A. R. day in September previous; but the idea was abandoned because of the great crowds that would be present, and the accommodations for bee-keepers would be unpleasant. Better have put up with a few unpleasant accommodations, and have had a large attendance. We always have *good* and *profitable* conventions when there is a large number of bee-keepers.

SPECIAL NOTICES.

FOUR CARLOADS IN ONE SHIPMENT.

We have just shipped to F. L. Possen & Son over 80,000 lbs. of bee-keepers' supplies in four carloads. They will go across the continent on the Northern Pacific R. R., together with 13 cars of garden seeds, in a solid train load, all for this one enterprising firm. This amount of supplies for Oregon and Washington indicates that bee-keeping is a growing industry in those rapidly developing States. This hipment includes about two tons of comb foundation, over 1200 hives and *three hundred thousand sections*, and other supplies too numerous to mention. Almost all the staple article of bee-supplies will be found in this stock; and our friends in the Northwest can be supplied with goods which can not be surpassed in quality and workmanship near home without the excessive freight and delay incident to shipping from here direct in less than carload lots.

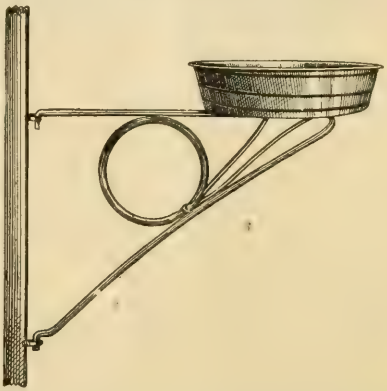
MUTH JARS IN STOCK AGAIN.

We have the following from Chas. F. Muth & Son, on a postal, dated Nov. 2, which explains itself:

We shall have again a full supply of honey-jars in about one week from now, when we shall ship all orders on hand promptly, and be ready for new orders. CHAS. F. MUTH & SON.

Cincinnati, Ohio.

DAISY FOLDING FLOWER-POT BRACKET.



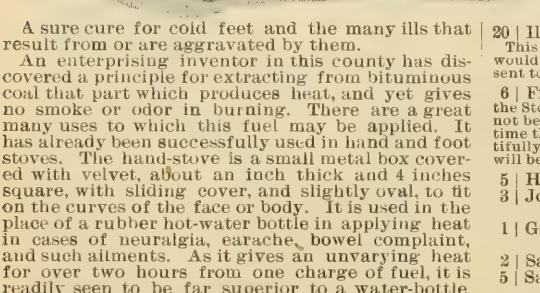
Above we show a very neat and convenient flower-pot bracket. The bracket is of wire that hooks into two screw-eyes in the wall, so it may swing around; and the pot-holder is a tin basin securely fastened to the bracket, so it may also be tipped down to one side. All is neatly japanned and striped. Introduction price, 15 cts. each; by mail, 7 cts. extra for postage. Given free for a new subscription to GLEANINGS, and 7 cts. to pay postage.

FAMILY GRINDSTONE.

In the cut above we show a very convenient and useful tool that should be found about every home. We have been selling these small grindstones for years, and have had them listed in our catalogue, but have not before brought them so prominently before our readers. Of course, those who have a large grindstone in good running order will not need one of these so much; but even then I think the good housekeepers could keep their knives and tools in better condition for use if they had one of these small stones. The stones are mounted in malleable-iron fixtures. There is a trough for

water to keep the stone wet when in use, the whole mounted on a wood base. They are made from 6 to 12 inches in diameter. We have in stock ready to ship promptly the following sizes at prices annexed; and, being situated within a few miles of the factory, we can get larger sizes if they are wanted. The 6-inch stone is large enough for ordinary use, and the one that most will prefer. Price 60 cents. We have also 8-inch at 80 cents, and can furnish 10-inch for $1.00 each; will sell the 6-inch by the dozen at $6.00.

COMFORT FOOT-STOVE.



A sure cure for cold feet and the many ills that result from or are aggravated by them.

An enterprising inventor in this county has discovered a principle for extracting from bituminous coal that part which produces heat, and yet gives no smoke or odor in burning. There are a great many uses to which this fuel may be applied. It has already been successfully used in hand and foot stoves. The hand-stove is a small metal box covered with velvet, about an inch thick and 4 inches square, with sliding cover, and slightly oval, to fit on the curves of the face or body. It is used in the place of a rubber hot-water bottle in applying heat in cases of neuralgia, earache, bowel complaint, and such ailments. As it gives an unvarying heat for over two hours from one charge of fuel, it is readily seen to be far superior to a water-bottle Many physicians who have tried it are greatly pleased with it. The fuel, in a slightly different form, is used in a foot-stove called "Comfort," as shown above. One charge of fuel in this will give an unvarying heat of 200 degrees for ten hours, more or less, according to the draft you give. It is of inestimable value in keeping warm on long drives in cold weather. It may greatly add to your comfort by being placed under your feet in office or home when other means of heat are not needed, or are not sufficient. The fuel lights with a match, and the stove is ready for use in three minutes.

Two dozen charges of fuel for the hand-stove weigh only 4 oz., and the stove itself about 5 oz. Price of stove and 2 doz. charges of fuel, 50c; by mail, 60c. Fuel alone at 15c per doz.; 2 doz., 25 cts.; 5c extra for postage. Price of foot-stove, $1.50. Fuel for same, per box of 50, $1.50. A Comfort foot-stove weighs about 3 lbs., and a box of fuel 8 lbs. They can not be mailed. We will make special prices on these goods to agents; and, from the experience of the inventor, I should say they would be very rapid sellers.

CONVENTION NOTICES.

The Central Michigan Bee-keepers' Association will meet in Lansing, in Pioneer Hall, Nov. 22. J. H. LARRABEE, Sec.

The Carolina Bee-keepers' Association will hold its third annual session at the Court-house, Charlotte, N. C., Dec. 7, 1893. A. L. BEACH, Sec.

There will be a meeting of the Northern Illinois Bee-keepers' Association at the Supervisors' Room of the Court-house, in Rockford, Ill., Dec. 19, 20, 1893 B. KENNEDY, Sec.
New Milford, Ill.

The Eastern Iowa bee-keepers will hold their annual meeting at Delmar, Dec. 13 and 14, 1893. All interested in bee culture are requested to be there, and to bring with them any thing of interest to bee-keepers. FRANK COVERDALE, Sec.
Welton, Ia

The Illinois State Bee-keepers' Association will hold its annual meeting at Springfield, Dec. 12 and 13, 1893, in the Senate Judiciary Room, at the Statehouse. The Illinois State Grange, the Illinois Horticultural Society, and the various live-stock associations, will hold their sessions at the same time and place. Railroad and hotel rates have already been secured. The fare on all the leading railroads will be one and a third for the round trip, on the certificate plan. That is, the purchaser of a ticket will ask the agent for a certificate showing that he paid full fare going, and he will get a return ticket for one-third. The leading hotels have given us a rate of $1.50 a day, where two full days' board is paid. Come, and let us have a grand meeting. The bee-keepers and horticulturists will have their headquarters at the Hotel Palace. J. A. STONE, Sec.

Books for Bee-Keepers and others.

Any of these books on which postage is not given will be forwarded by mail, postpaid, on receipt of price.

In buying books, as every thing else, we are liable to disappointment if we make a purchase without seeing the article. Admitting that the bookseller could read all the books he offers, as he has them for sale, it were hardly to be expected he would be the one to mention all the faults, as well as good things about a book. I very much desire that those who favor me with their patronage shall not be disappointed, and therefore I am going to try to prevent it by mentioning all the faults, so far as I can, that the purchaser may know what he is getting. In the following list, books that I approve I have marked with a *; those I especially approve, **; those that are not up to times, †; books that contain but little matter for the price, large type, and much space between the lines, ‡, foreign §. The bee-books are all good.

BIBLES, HYMN-BOOKS, AND OTHER GOOD BOOKS.

As many of the bee-books are sent with other goods by freight or express, incurring no postage, we give prices separately. You will notice, that you can judge of the size of the books very well by the amount required for postage on each.

8	Bible, *good print*, neatly bound	20
10	Bunyan's Pilgrim's Progress**	30
20	Illustrated Pilgrim's Progress**	75

This is a large book of 425 pages and 175 illustrations, and would usually be called a $2.00 book. A splendid book to present to children. Sold in gilt edge for 25c more.

6 | First Steps for Little Feet. By the author of the Story of the Bible. A better book for young children can not be found in the whole round of literature, and at the same time there can hardly be found a more attractive book. Beautifully bound, and fully illustrated. Price 50 c. Two copies will be sold for 75 cents. Postage six cents each.

5	Harmony of the Gospels	35
3	John Ploughman's Talks and Pictures, by Rev. C. H. Spurgeon*	10
1	Gospel Hymns, consolidated Nos. 1, 2, 3, and 4, words only, cloth, 10 c; paper	05
2	Same, board covers	20
5	Same, words and music, small type, board covers	45
10	Same, words and music, board covers	75
3	New Testament in pretty flexible covers	05
5	New Testament, new version, paper covers	10
5	Robinson Crusoe, paper cover	10
4	Stepping Heavenward**	18
15	Story of the Bible**	1 00

A large book of 700 pages, and 274 illustrations. Will be read by almost every child.

5	The Christian's Secret of a Happy Life**	25
8	Same in cloth binding	50
	"The Life of Trust," by Geo. Muller**	1 25
1	Ten Nights in a Bar-Room, T. S. Arthur*	05
5	Tobacco Manual**	45

This is a nice book that will be sure to be read, if left around where the boys get hold of it, and any boy that reads it will be pretty safe from the tobacco habit.

BOOKS ESPECIALLY FOR BEE-KEEPERS.

Postage]		[Price without postage.
15	A B C of Bee Culture. Cloth	1 10
5	A Year Among the Bees, by C. C. Miller	45
	Advanced Bee Culture, by W. Z. Hutchinson	50
3	Amateur Bee-keeper, by J. W. Rouse	22
14	Bees and Bee-keeping, by Frank Cheshire, England, Vol. I.§	2 36
21	Same, Vol. II.§ r	2 79
	or, $5.25 for the two, postpaid.	
	Bees and Honey, by T. G. Newman	1 00
10	Cook's New Manual. Cloth	90
5	Doolittle on Queen-Rearing	95
2	Dzierzon Theory	10
1	Foul Brood; Its Management and Cure; D. A. Jones	09
1	Honey as Food and Medicine	05
10	Langstroth on the Hive and Honey-Bee‡	1 25
15	Langstroth Revised by Ch. Dadant & Son	1 25
10	Quinby's New Bee-Keeping	1 40
	Thirty Years Among the Bees, by H. Alley	50
4	Success in Bee Culture, by James Heddon	46
	Handling Bees, by Langstroth. Revised by Dadant	08
	Bee-keeping for Profit, by Dr. G. L. Tinker	25
5	The Honey Bee, by Thos. William Cowan	95
	British Bee-Keeper's Guide Book, by Thos. William Cowan, England§	40
3	Merrybanks and His Neighbor, by A.I. Root	15
4	Winter Problem in Bee-keeping, by Pierce	46

MISCELLANEOUS HAND-BOOKS.

3 | A B C of Potato Culture, Terry** 35
This is T. B. Terry's first and most masterly work. The book has had an enormous sale, and has been reprinted in foreign languages. When we are thoroughly conversant with friend Terry's system of raising potatoes, we shall be ready to handle almost any farm crop successfully. It has 48 pages and 22 illustrations.

5 | A B C of Carp Culture, by Geo. Finley 35
5 | A B C of Strawberry Culture, by T. B. Terry and A. I. Root, 144 pages; 32 illustrations 35
5 | An Egg-Farm, Stoddard** 45
| Amateur Photographer's Hand-book** 70
| Barn Plans and Out-Buildings* 1 50
| Canary Birds, Paper 50
| Draining for Profit and Health, Warring .. 1 50
10 | Fuller's Grape Culturist** 1 40
| Farming For Boys* 75
This is one of Joseph Harris' happiest productions, and it seems to me that it ought to make farm-life fascinating to any boy who has any sort of taste for gardening.

7 | Farm, Gardening, and Seed-Growing** 90
This is by Francis Brill, the veteran seed-grower, and is the only book on gardening that I am aware of that tells how market-gardeners and seed-growers raise and harvest their own seeds. It has 166 pages.

12 | Gardening for Pleasure, Henderson* 1 85
While "Gardening for Profit" is written with a view of making gardening PAY, it touches a good deal on the pleasure part; and "Gardening for Pleasure" takes up this matter of beautifying your homes and improving your grounds without the special point in view of making money out of it. I think most of you will need this if you get "Gardening for Profit." This work has 404 pages and 203 illustrations.

12 | Gardening for Profit, new edition** 1 85
This is a late revision of Peter Henderson's celebrated work. Nothing that has ever before been put in print has done so much toward making market-gardening a science and a fascinating industry. Peter Henderson stands at the head, without question, although we have many other books on these rural employments. If you can get but one book, let it be the above. It has 376 pages and 138 cuts.

| Gardening for Young and Old, Harris** 1 25
This is Joseph Harris' best and happiest effort. Although it goes over the same ground occupied by Peter Henderson, it particularly emphasizes thorough cultivation of the soil in preparing your ground; and this matter of adapting it to young people as well as old is brought out in a most happy vein. If your children have any sort of fancy for gardening it will pay you to make them a present of this book. It has 187 pages and 46 engravings.

10 | Garden and Farm Topics, Henderson** 75
| Gray's School and Field Book of Botany ... 1 80
5 | Gregory on Cabbages; paper* 25
5 | Gregory on Squashes; paper* 25
5 | Gregory on Onions; paper* 25
The above three books, by our friend Gregory, are all valuable. The book on squashes especially is good reading for almost anybody, whether they raise squashes or not. It strikes at the very foundation of success in almost any kind of business.

15 | How to Make the Garden Pay.** 1 35
By T. Greiner. This is a new book, just out, and it gives the most explicit and full directions for gardening under glass of any book in the world. Those who are interested in hot-beds, cold-frames, cold-greenhouses, hot-houses or glass structures of any kind for the growth of plants, can not afford to be without the book.

| Handbook for Lumbermen 10
10 | Household Conveniences 1 40
2 | How to Propagate and Grow Fruit, Green* 15
2 | Injurious Insects, Cook 25
10 | Irrigation for the Farm, Garden, and Orchard, Stewart* 1 40
This book, so far as I am informed, is almost the only work on this matter that is attracting so much interest, especially recently. Using water from springs, brooks, or windmills, to take the place of rain, during our great droughts, is the great problem before us at the present day. The book has 274 pages and 142 cuts.

3 | Maple Sugar and the Sugar-bush** 35
By Prof. A. J. Cook. This was written in the spring of 1887 at my request. As the author has, perhaps, one of the finest sugar-camps in the United States, as well as being an enthusiastic lover of all farm industries, he is better fitted, perhaps, to handle the subject than any other man. The book is written in Prof. Cook's happy style, combining wholesome moral lessons with the latest and best method of managing to get the finest syrup and maple sugar, with the least possible expenditure of cash and labor. Everybody who makes sugar or molasses wants the sugar-book. It has 42 pages and 35 cuts.

1 | Poultry for Pleasure and Profit** 10
11 | Practical Floriculture, Henderson* 1 35
10 | Profits in Poultry* 90
2 | Practical Turkey-raising 10
By Fanny Field. This is a 25-cent book which we offer for 10 cts.; postage, 2 cts.

4 | Peabody's Webster's Dictionary 10
Over 30,000 words and 250 illustrations.

2 | Rats: How to Rid Farms and Buildings of them, as well as other Pests of like Character 15
This little book ought to be worth dollars instead of the few cents it costs to any one who has ever been troubled with these pests, and who has not! It is written in such a happy vein that every member of the family will read it clear through, just about as soon as they get hold of it. It contains a complete summing up of the best information the world can furnish.

1 | Silk and the Silkworm 10
10 | Small-Fruit Culturist, Fuller 1 40
10 | Success in Market-Gardening* 90
This is a new book by a real, live, enterprising, successful market gardener who lives in Arlington, a suburb of Boston, Mass. Friend Rawson has been one of the foremost to make irrigation a practical success, and he now irrigates his grounds by means of a windmill and steam-engine whenever a drought threatens to injure the crops. The book has 208 pages, and is nicely illustrated with 110 engravings.

| Ten Acres Enough 1 00
| The Silo and Ensilage, by Prof. Cook, new edition, fully illustrated 25
| Talks on Manures* 1 75
This book, by Joseph Harris is, perhaps, the most comprehensive one we have on the subject, and the whole matter is considered by an able writer. It contains 366 pages.

2 | The Carpenter's Steel Square and its Uses. 15
10 | The New Agriculture; or, the Waters Led Captive 75
2 | Treatise on the Horse and his Diseases 10
5 | Tile Drainage, by W. I. Chamberlain 35
Just out. Fully illustrated, containing every thing of importance clear up to the present date.
The single chapter on digging ditches, with the illustrations given by Prof. Chamberlain, should alone make the book worth what it costs, to every one who has occasion to lay ten rods or more of tile. There is as much science in digging as in doing almost any thing else; and by following the plan directed in this book, one man will often do as much as two men without this knowledge. The book embraces every thing connected with the subject, and was written by the author while he was engaged in the work of digging the ditches and laying the tiles HIMSELF, for he has laid literally miles of tile on his own farm in Hudson, O.

5 | Tomato Culture 35
In three parts. Part first—by J. W. Day, of Crystal Springs, Miss., treats of tomato culture in the South, with some remarks by A. I. Root, adapting it to the North. Part second—By D. Cummins, of Conneaut, O., treats of tomato culture especially for canning-factories. Part third—By A. I. Root, treats of plant-growing for market, and high-pressure gardening in general. This little book is interesting because it is one of the first rural books to come from our friends in the South. It tells of a great industry that has been steadily growing for some years past; namely, tomato-growing in the South to supply the Northern markets. The little book, which is fully illustrated, gives us some pleasant glimpses of the possibilities and probabilities of the future of Southern agriculture. Even though you do not grow tomatoes to any considerable extent, you will find the book brimful of suggestions of short cuts in agriculture and horticulture, and especially in the line of market-gardening.

3 | Winter Care of Horses and Cattle 35
This is friend Terry's second book in regard to farm matters; but it is so intimately connected with his potato-book that it reads almost like a sequel to it. If you have only a horse or a cow, I think it will pay you to invest in the book. It has 44 pages and 4 cuts.

8 | What to Do and How to be Happy While Doing It, by A. I. Root 50
3 | Wood's Common Objects of the Microscope** 47

NEW BOOKS ON GARDENING.

2 | Celery for Profit, by T. Greiner 25
The first really full and complete book on celery culture, at a moderate price, that we have had. It is full of pictures, and the whole thing is made so plain that a schoolboy ought to be able to grow paying crops at once, without any assistance except from the book.

3 | Onions for Profit 45
Fully up to the times, and includes both the old onion culture and the new method. The book is fully illustrated, and written with all the enthusiasm and interest that characterize its author, T. Greiner. Even if one is not particularly interested in the business, almost any person who picks up Greiner's books will like to read them through.

5 | Manures; How to Make and How to Use them; in paper covers 45
6 | The same in cloth covers 65
Covering the whole matter, and discussing every thing to be found on the farm, refuse from factories, mineral fertilizers from mines, etc. It is a complete summing-up of the whole matter. It is written by F. W. Sempers.

7 | Market-gardening and Farm Notes, by Burnett Landreth 90
The Landreths are the pioneer seedsmen of America; and the book is worth fully as much as we might expect it to be. I think I received hints from it worth the price, before it had been in my hands fifteen minutes. It is exceedingly practical, and tells what has been done and what is BEING done, more than it discourses on theory.

A. I. ROOT, Medina, Ohio.

For Sale or Exchange.

Barnes foot-power saw, six saws, three cutter-heads, 1½ horse-power engine. Wanted, comb honey.

R. B. GEDYE, La Salle, Ill.

For November Only.

Two Papers for the Price of One.

The *Farm Journal*, of Philadelphia, one of the cleanest, brightest, and most valuable of the agricultural monthlies, has made such favorable clubbing terms that we are able to **Give a Year's Subscription Free** on the following conditions: Send us $1.00 to renew your subscription *before* the time paid for is up. If you are in arrears for GLEANINGS IN BEE CULTURE you must pay up to the end of this year and for a year in advance, when you will be entitled to the *Farm Journal* for a year also. If you secure a new subscription to GLEANINGS, and send $1.00 for the same, you may have the *Farm Journal* a year to pay for your trouble, or you may have it sent to the new subscriber if you wish. All new subscriptions to either paper will receive the rest of this year remaining, after your subscription is received, and all of next year.

This offer is good only for this Month of November.

After this month the club price will be $1.10; and to those who are in arrears for GLEANINGS, the best club price is $1.20, unless all arrears are paid and a year paid in advance. That you may know what others think of the *Farm Journal* we give here a few testimonials from leading agricultural writers and editors as to what they think of it.

What a Practical Connecticut Fruit-grower and Nurseryman thinks of it.

I read the *Farm Journal* because it is bright, pointed, and interesting, from beginning to end, advertisements and all. Life is short—I am busy—and there is often the pith of a column article in a half-inch paragraph in the *Farm Journal*. If I want the paddings and trimmings, I can make them up in my own mind nights and Sundays, when at work or on the wing: *Farm Journal* does not intrude them on me. The whole paper is full of sunshine.
South Glastonbury, Ct. J. H. HALE.

From the Department of Agriculture.

The *Farm Journal* is unique, practical, valuable. There are points sometimes in a single number worth the subscription price for a whole year.
EDWIN WILLITS,
First Assistant Secretary of Agriculture.
Washington, D. C.

Just as Good for California.

I hope you will get the one million subscribers you are trying for. I am sure your paper merits them. It is certainly the best farm paper I have ever seen, as it fairly bristles with suggestions and wrinkles that are most useful in every-day life on the farm.
San Diego Co., Cal. J. JESSOP.

It is Doing a Good Work.

The *Farm Journal* carries to its readers a large amount of helpful information in condensed, available form. It is doing a good work, and I wish it continued success. PROF. W. A. HENRY.
Madison, Wisconsin.

Crisp, Newsy, Never Prosy.

The *Farm Journal* is crisp, newsy, tells much on a page, is up to the times, often in advance, and withal practical. Its contributors are among the best, and never prosy, and one wants to read all the pages first, and each one is the best. This is why I read the *Farm Journal*. JOHN GOULD.
Aurora, Ohio.

Word from Joseph Harris.

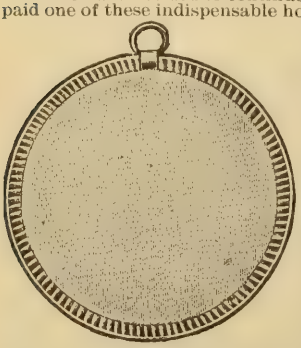
The *Farm Journal* is full of good things. I do not see how any intelligent farmer, gardener, or fruit-grower can help reading it.
Moreton Farm, N. Y. JOSEPH HARRIS.

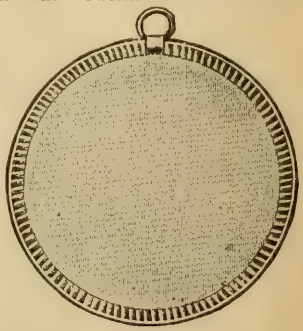
Yes, I do read the *Farm Journal*. Why? Because it is the cleanest, brightest, and best paper of its class—in my judgment.
E. S. CARMAN, Editor of the *Rural New-Yorker*.
Riverside Park, N. J.

If you wish to judge of its merits yourself, address a request for sample copy either here or to *Farm Journal*, Philadelphia, Pa., and you will receive it promptly. If you want to take advantage of this offer, *do it now*. Remember that a month passes very rapidly, and with it will pass one of the best opportunities of the year. If you are already a reader of the *Farm Journal* you can have your subscription advanced a year on this offer.

AUGITE STOVE-MATS.

We have decided to continue our October premium for another month; that is, we will send free postpaid one of these indispensable household articles, on the same conditions that we send the *Farm Journal* above—as a premium for a new subscription, or to those who pay for a year in advance before the time paid for is up, or who pay all arrears up to the end of this year, and for a year in advance. This offer will positively be withdrawn December 1st. After that date, to get the mat will require 10 cts. extra.





Canvassing time is here again, and many are improving their time and their revenue by selling these stove-mats. It is one of the most ready sellers of any thing that an agent can carry. We furnish them at $1.00 per doz.; 6 doz., $5.50; 12 doz., $10.50; sent at your expense. If sent by mail, the postage is 6c each; 60c per doz. We get 10 gross from the factory every two or three weeks, and rejoice when the sales increase, because of the blessing they bring to every housekeeper who uses them.

A. I. ROOT, = = Medina, Ohio.

Bee-Hives.

Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue 23 22db

W. H. PUTNAM, River Falls, Pierce Co., Wis.

FOR SALE —500 Ferrets, a well-trained bird-dog, Scotch Collie, and Coon dog puppies. Price list free. 4tfdb

N. A. KNAPP,
ROCHESTER, LORAIN CO., O.

TAKE NOTICE!

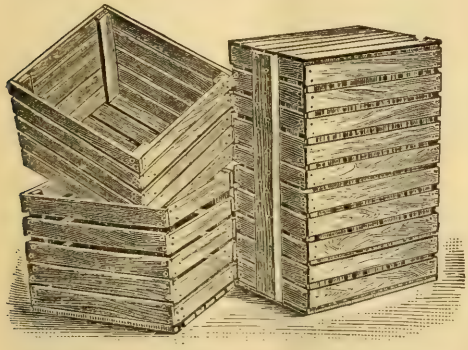
BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH,
8tfdb New London, Wis

Warranted Golden Queens,

80c; 6 for $4 25; dozen, $8.00; young tested, $1.00 up. Write for prices on select and breeders.
5tfdb **J. B. CASE, Port Orange, Vol. Co., Fla.**

$5.50 For 3, or $10.00 for 6, Finest Brown Leghorns, or Plymouth Rocks. Other varieties. Circular free. Address GEER BROS., St. Marys, Mo., or H. B. GEER, Nashville, Tenn. 5tfdb

BUSHEL BOXES.



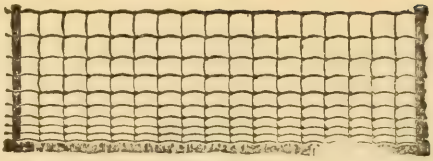
The above cut shows our new-style *all-slatted bushel box*. We have two other styles; one has slatted bottom and sides with solid ends in three pieces called the *slatted bushel box*. The other has solid ends and close bottom and sides, and is bound with galvanized iron and called the *galvanized bound box*. These boxes were devised by T. B. Terry for handling potatoes, for which purpose nothing could be handier. The potatoes are picked up into the boxes in the field and left in them till sold. Other crops, such as cucumbers, tomatoes, and apples are being handled in these same boxes. They are of such a size that two go crosswise in an ordinary wagon-box. Outside measure is 14¼x16⅞x12½ deep, and they hold a bushel of potatoes level full so they can be piled one upon another. The above cut shows two *all-slatted* boxes nailed up, and a bundle of 15 alongside; 13 of the 15 are in the flat, packed inside the other two, and nails of the proper kinds are included. The *slatted* and *galvanized bound* boxes are put up in the same way, except there are only 12 in a package instead of 15. Each package weighs about 85 to 90 lbs.

PRICE LIST.

All-slatted bushel box, per crate of 15..... .. $1 50
Slatted bushel box, per crate of 12..... ..1 50
Galvanized bound bushel box, per crate of 12....2 10

In lots of ten crates, 5 per cent discount will be deducted. Price each, nailed, 15, 18, and 22 cents, respectively. A 20-page pamphlet called Handling Farm Produce, telling all about these boxes, mailed free on application.

A. I. ROOT, Medina, O.



Time WILL Tell.

SIX YEARS AGO

A prominent farmer in Indiana put up **lots** of Page Fence. Did it suit? So well that his son lately formed a partnership with the Agent. Result! Orders enough for a car load of 2500 rods, right now in the dull times. Competition was nowhere, against positive proof of efficiency and durability. 7-6db

PAGE WOVEN-WIRE FENCE CO., Adrian, Mich.

☞In responding to this advertisement mention GLEANINGS.

HATCH CHICKENS BY STEAM
WITH THE IMPROVED
EXCELSIOR INCUBATOR.

Thousands in Successful Operation. *SIMPLE, PERFECT, and SELF-REGULATING.* **Guaranteed** to hatch a **larger percentage** of fertile eggs, at **less cost,** than any other Incubator. Send 6c. for Illus. Catalog. Circulars Free.

GEO. H. STAHL, Pat. & Sole Mfr., Quincy, Ill.

Please mention GLEANINGS. 21-8db

To Get Acquainted,

We will send the **Bee-keepers' Enterprise** from now until Jan., '95 (16 months), for 50 c.; or 3 months for 15 cts. You will be pleased with your investment, in either case. 18 17tfdb

Burton L. Sage,
New Haven, = = Conn.

Read what J. I. PARENT, of CHARLTON, N. Y., says—"We cut with one of your Combined Machines last winter 50 chaff hives with 7-inch cap, 100 honey-racks, 500 broad frames, 2,000 honey-boxes, and a great deal of other work. This winter we have doubled the amount of bee-hives, etc., to make, and we expect to do it all with this saw. It will do all you say it will." Catalogue and Price List free. Address W. F. & JOHN BARNES, 545 Ruby St., Rockford, Ill.

When more convenient, orders for Barnes' Foot-Power Machinery may be sent to me. A. I. ROOT.

VANDERVORT
COMB-FOUNDATION MILLS.

Send for samples and reduced price list.
1tfd **JNO. VANDERVORT, Laceyville, Pa.**

Cash for Beeswax!

Will pay 21c per lb. cash, or 24c in trade for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 28c per lb., or 30c for *best selected wax*.

Unless you put your name *on the box*, and notify us by mail of amount sent, I can not hold myself responsible for mistakes. It will not pay as a general thing to send wax by *express*.

A. I. ROOT, Medina, Ohio.

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A KIND WORD FOR THE MONROE SEEDLING POTATOES, FROM WILBUR W. FENN.

We have been testing the Freemans with the Monroes, and think that one is fully as good as the other. I think that, next spring, the Monroes will take the lead. My yield was 2-2 bushels per acre. I should like to raise some Freemans for you next year. W. W. Fenn.

Tallmadge, O., Nov. 25.

CONVENTION NOTICES.

The Kansas State Bee-keepers' Association will meet at Ottawa, Kan., Dec. 28, 29, 1893. J. R. Barnhard, Sec.

The 19th annual meeting of the Vermont Bee-keepers' Association will be held in Burlington, Vt., Jan. 24, 25, 1894. Particulars soon. H. W. Scott, Sec., Barre, Vt.

There will be a meeting of the Northern Illinois Bee-keepers' Association at the Supervisors' Room of the Court-house, in Rockford, Ill., Dec. 19, 20, 1893. B. Kennedy, Sec.
New Milford, Ill.

The Eastern Iowa bee keepers will hold their annual meeting at Delmar, Dec. 13 and 14, 1893. All interested in bee culture are requested to be there, and to bring with them any thing of interest to bee-keepers. Frank Coverdale, Sec.
Welton, Ia.

The Illinois State Bee-keepers' Association will hold its annual meeting at Springfield, Dec. 12 and 13, 1893, in the Senate Judiciary Room, at the Statehouse. The Illinois State Grange, the Illinois Horticultural Society, and the various live-stock associations, will hold their sessions at the same time and place. Railroad and hotel rates have already been secured. The fare on all the leading railroads will be one and a third for the round trip, on the certificate plan. That is, the purchaser of a ticket will ask the agent for a certificate showing that he paid full fare going, and he will get a return ticket for one-third. The leading hotels have given us a rate of $1.50 a day, where two full days' board is paid. Come, and let us have a grand meeting. The bee-keepers and horticulturists will have their headquarters at the Hotel Palace. J. A. Stone, Sec.

Special Notices.

SPECIAL SECTIONS AT SPECIAL PRICE.

Having finally perfected and got in operation our new section machinery by which all our sections are now made by a new process, uniform in thickness, and of superior quality and finish, we desire to close out our entire stock on hand made in the old way; and in order to do so we offer them at the following special prices, which will apply so long as this stock lasts. You may also deduct the early-order discounts from these prices as on other goods ordered from our catalogue, as noted on page 4 thereof: 4¼x4¼x1⅜ and 1⅞ No. 1 cream sections, at $2.00 per 1000; 5,000 for $9.00; 10,000 for $17.00.

4¼x4¼x either 1⅜, 1¾, 7 to ft., 1 1/16, 1⅝, and 1½ inch, No. 1 white sections, at $2.50 per 1000; 2000 for $4.50; 3000 for $6.50; 5000 for $10.00. In lots of 10,000 or more, write for special prices. Notice that we have none of the regular width 1⅞ or of 1 5/16 No. 1 white sections in this stock, though we have the No. 1 cream, which are equally good, except in color. We have, all told, only 300,000 to 400,000; and the quality of these goods is superior to many offered at catching prices, and are a bargain to those who can use these widths. The 1 13/16 is so near the regular width that very many could use them without inconvenience, especially if they use a wood separator where they did not use any separator with regular sections.

Wants or Exchange Department.

Notices will be inserted under this head at one-half our usual rates. All advertisements intended for this department must not exceed five lines, and you must say you want your adv't in this department, or we will not be responsible for errors. You can have the notice as many lines as you please, but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices offering articles for sale, can not be inserted under this head. For such our regular rates of 20 cts. a line will be charged, and they will be put with the regular advertisements. We can not be responsible for dissatisfaction arising from these "swaps."

TO exchange.—Bicycles, 56 inch Champion, 52-in. Eagle. Will exchange either for 120 lbs. of good extracted honey. Send sample. Also several good safeties to exchange. J. A. Green, Ottawa, Ill.

WANTED.—To exchange for honey or offers, Toulouse geese, English dorkins, Scotch collies, and ferrets. Fine stock. Wynn Smith, Lock Box 235, Aurora, Ill.

WANTED.—To exchange 38 colonies, mostly Italians in fine condition, in L. hives, for a young mare, or pure-bred poultry, at $3.00 per colony for the lot, or $3.50 each. Wm. Caswell, 22-23 Sacramento, Cal.

WANTED.—To spend several weeks during the winter in a healthy locality in the South. Bee-keepers preferred. Correspondence solicited. J. L. Hubbard, Walpole, N. H.

WANTED.—An apiary on shares, in any State in the South. A. Carder, Hebron, Boone Co., Ky.

FOOT-POWER MACHINERY.

COMPLETE OUTFITS.

Wood or metal workers without steam power can successfully compete with the large shops by using our NEW LABOR-SAVING MACHINERY, latest and most approved for practical shop use; also for Industrial Schools, Home Training, etc. CATALOGUE FREE.

SENECA FALLS MFG. CO.,
44 Water St., Seneca Falls, N. Y.

☞In responding to this advertisement mention Gleanings.

CALIFORNIA APIARY AND POULTRY RANCH FOR SALE.

13 acres, house, 4 rooms and pantry, painted and screened, 2-light sash; fruit-trees, raisin and table grapes; barn, 3 hen-houses, honey-house; nice water; 105 stands of bees, in fine condition; ½ mile to Newhall, on Southern Pacific R. R. Church, schools, hotel, stores, etc. For full particulars, reasons for selling, etc., address *A. M. WARD,*
Newhall, Los Angeles Co., Cal.

DOVETAILED HIVES, SIMPLICITY HIVES,

SECTIONS, EXTRACTORS, ETC.

FULL LINE OF

BEE-KEEPERS' SUPPLIES.

60-PAGE CATALOGUE. 1tfdb

J. M. JENKINS, WETUMPKA, ALABAMA.

☞In responding to this advertisement mention Gleanings.

HONEY COLUMN.

CITY MARKETS.

CHICAGO.—*Honey.*—The comb honey that was on exhibition at the World's Fair we are selling at 16; and any thing that grades as fine will bring this figure. A No. 1 article of white honey, well-filled sections, brings 15, if clean and in No. 1 order generally. The receipts continue to about equal the demand. There is the usual sale for dark comb. Extracted without material change, the lower grades selling at 5@6; higher grades, 6@7. Beeswax, 22.

Parties who desire to have their comb honey sold before February, should ship it now.

R. A. BURNETT & Co.,
Nov. 18. 161 So. Water St., Chicago, Ill.

BUFFALO.—*Honey.*—Light improvement in the honey market; value remains unchanged; fancy, mostly 14@15; choice, 12@13; commoner grades, dark, etc., 9@10; no doubt that Buffalo will be an excellent outlet for honey, and we should be pleased to correspond with a few that have some honey on hand, and will advance liberally on the same.

BATTERSON & Co.,
Nov. 18. Buffalo, N. Y.

CINCINNATI.—*Honey.*—There is a fair demand, in the small way, for extracted and comb honey. But the demand from manufacturers is uncomfortably slow, while stocks on hand are large. Extracted honey brings 5@8 on arrival; comb honey, 12@16 in the jobbing way. Demand for beeswax is fair, at 20@23 for good to choice yellow.

Nov. 20. CHAS. F. MUTH & SON,
Cincinnati, Ohio.

ALBANY.—*Honey.*—White honey is accumulating to some extent, and prices are declining accordingly; while buckwheat continues scarce with price unchanged. We quote: Clover, pound sections, 12@14; buckwheat, 11@12. There is an improved demand for extracted at following price: Dark, 5@6; light, 6½@7.

Nov. 20. CHAS. MCCULLOCH & Co.,
393, 395, 397 Broadway, Albany, N. Y

DETROIT.—*Honey.*—The demand for good comb honey was never greater in this market. The supply is not large, and continues to bring 13@15. Extracted, 7@8; beeswax, 23@24. M. H. HUNT.

Nov. 20. Bell Branch, Mich.

CLEVELAND.—*Honey.*—We are selling white, No. 1, 15½@16; No. 2, 13@13½. Demand is more lively than for some time. Receipts liberal, and prospects of an even market for some time. Beeswax, 22@25.

WILLIAMS BROS.,
Nov. 18. 80 & 82 Broadway, Cleveland, O.

CHICAGO.—*Honey.*—The Chicago market has plenty of honey, and 14c seems to be the outside price obtainable. Any thing that will not grade strictly No. 1 must be sold at 12@13. Large quantities have been sold, but the supply is at present in excess of the demand. Extracted finds ready sale at 6@6½ for Northern honey; Southern, in barrels, 5c. Beeswax, 22@24.

S. T. FISH & Co.,
Nov. 23. 189 South Water St., Chicago, Ill.

MILWAUKEE.—*Honey.*—The supply of honey is very good on this market, and sales move slowly. Can quote: Choice pound sections, 15, and some occasional sales at 16. When not up to first quality, and discolored or mixed quality in case, it is not very salable at any price. The best is good enough. Extracted, dull; 7@8; white amber, 5@6.

Nov. 20. A. V. BISHOP,
Milwaukee, Wis.

KANSAS CITY.—*Honey.*—Demand fair, with good stock of all kinds. One pound white, 15; amber, 13. Extracted, white, 6½@7; amber, 6; dark, 4½@5. Beeswax, 22. HAMBLIN & BEARSS,

Nov. 11. Kansas City, Mo.

ST. LOUIS.—*Honey.*—With the advance of cold weather we look for improved trade in honey. We quote: Comb, 10@14; extracted, in cans, 6@7; in barrels, 4@4½. Prime yellow beeswax, 22½. wax, prime, 21. D. G. TUTT GROCER CO.,

Nov. 20. St. Louis, Mo.

KANSAS CITY.—*Honey.*—The supply of comb and extracted is liberal. The demand fair for white comb and white extracted. Dark of both kinds, slow sale. We quote: White comb, No. 1, 14@15; No. 2, 12@13; amber, No. 1, 13@14; No. 2, 10@12; extracted, 5@7. Beeswax, 20@22.

CLEMONS, MASON & Co.,
Nov. 20. Kansas City, Mo.

ST. LOUIS.—*Honey.*—Extracted, 5½@6, both amber and white. Comb, 1-lb. California, white, 14@15; dark, 12½@13½. Domestic, scarce; market quiet, demand for comb light. Receipts since last report, 2 carloads, SMITH & AUSTRIAN,

Nov. 20. St. Paul, Minn.

FOR SALE.—34,000 lbs. honey. I have a choice lot of buckwheat honey; price 6¼c per lb.; basswood, 7½c, f. o. b.; 200-lb kegs. Sample on application.

W. L. COGGSHALL, West Groton, N. Y.

FOR SALE.—60-lb. cans of extracted honey (fall flowers) at $5.00 per can. Address

ED. W. COLE, Kenton, Ohio.

FOR SALE.—2000 lbs. of fine comb honey, in 1-lb. sections, 24-lb. cases, and 2000 lbs. of clover and basswood honey, in 60-lb. square jacket cans. Sample of extracted honey by mail on application.

EZRA BAER, Dixon, Illinois.

FOR SALE.—Light amber honey, by the can and by the barrel, at 6 cts. per lb. J. B. MURRAY,
Ada, Ohio.

BUFFALO, N. Y. Unsurpassed Honey Market. BATTERSON & CO. Responsible, Reliable, Commission Merchants. 18tfdb **and Prompt.**

CHAS. ISRAEL & BROS., 110 Hudson St., N. Y.
WHOLESALE DEALERS & COMMISSION MERCHANTS. *Honey and Beeswax.*
Established 1875.

Southern Bee-keepers,
Do you know that, freight considered, we can furnish you with supplies at a less cost than any house in this country? Freight rates from New York to Jacksonville, Fla., only 35 cts. per 100 lbs. Our circular free upon application.
I. J. STRINGHAM, 105 Park Place, New York City.
23-22 tfdb
☞In responding to this advertisement mention GLEANINGS.

FOR SALE CHEAP.
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FOR SALE.—Ten colonies of bees in Simplicity hives. Extra good condition for winter. ROLAND HOLMES,
Fort Wayne, Ind.

OTTUMWA BEE-HIVE FACTORY.
Bee-keepers, look to your interests. Every thing in the line of bee-supplies constantly on hand. Price list free. GREGORY BROS. & SON,
1-23o Ottumwa, Ia. South side.

FLORIDA. For sale, 75 hives of bees; inquire of AUG. LEYVRAZ, Francis, Fla. 19tf

White SHIPPING-CASES.
To have your honey sell well, use our beautiful cases, 12 and 24 pound sizes. Send for illustrated catalogue of every thing needed in the apiary.
M. H. HUNT, Bell Branch, Mich.

Jennie Atchley's
is the place to arrange for your queens for 1894. She will have them ready.
Beeville, Texas.

THE REVIEW FOR 1894.

As the occasion demands, the ***Special Topic*** feature, that of bringing together in one issue the latest views of the best men upon some one topic, will be continued. In the ***Extracted Department*** will be given the most valuable articles to be found in the other journals. ***Hasty*** will continue to give, each month, about three pages of his inimitable "Condensed View of Current Bee Writings." R. L. Taylor will write each month under the head of "***Work at Michigan's Experiment Apiary.***" Next summer, in company with his camera, the editor expects to visit a large number of bee-keepers, making extended trips through Canada, the Eastern, Middle, and Western States; and the ***Review*** will contain ***Illustrations*** and descriptions of the bee-keepers visited, their homes, families, apiaries, implements, methods, etc. The principal ***Correspondents*** are successful, practical men, most of whom have numbered their colonies by the hundred, and sent honey to market by the ton, and who can write, from experience, articles containing information of real benefit to honey-producers. In short, the ***Review*** will strive most earnestly to stand in the ***Front Rank,*** to publish advanced ideas, to be interesting, enterprising, wide awake, up with the times, and of such a character that no practical bee-keeper can afford to do without it. Price $1.00 a year. The ***Review*** and "***Advanced Bee Culture***" (a 50-cent book) for $1.25. New subscribers will receive balance of this year free. Three late but different issues of the ***Review*** for 10 cents.

W. Z. HUTCHINSON, Flint, Mich.

Doolittle's Queen-Rearing Free.

We have some of G. M. Doolittle's "Scientific Queen-Rearing" books (170 pages) in paper covers, a copy of which we will mail **FREE** to the new subscriber who sends us $1.00 for the **Weekly "AMERICAN BEE JOURNAL"** for one year This same book in cloth binding sells for $1.00, but we give to a New Subscriber one of the paper-bound edition for **nothing.** Order quick, if you want one. They will all soon be gone. A sample copy of the "Bee Journal" is sent free on application to the publishers.

Address, **GEO. W. YORK & CO., 56 Fifth Ave., CHICAGO, ILL.**

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Has No Sag in Brood-frames.

Thin Flat-Bottom Foundation

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Being the cleanest, it is usually worked the quickest of any foundation made.

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MUTH'S HONEY EXTRACTOR.

Square Glass Honey Jars, Tin Buckets, Bee-hives, Honey Sections, Etc., Etc. Perfection Cold-blast Smokers.

APPLY TO

CHAS. F. MUTH & SON, Cincinnati, O.

P. S.—Send 10-ct. stamp for "Practical Hints to Bee-keepers."

BIG DISCOUNT on Foundation and Sections. Thin foundation, 50 cts. per lb.; brood, 40 cts. No. 1 sections, $2.75 per M. Every thing cheap, price list free. E. H. Trumper, Bankers, Mich.

BBB'S! If you keep ***BEES,*** subscribe for the **Progressive Bee-keeper,** a journal devoted to Bees, Honey, and kindred industries. ***50 cts. per year.*** Sample copy, also a beautifully illustrated catalogue of Bee-keepers' supplies, FREE. Address

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Notice to Jobbers

G. B. Lewis Co., Watertown, Wis.,

Invite all Wholesalers and Jobbers of Bee-Keepers' Supplies to write them for contracts for Hives and Sections the coming season. . . .

1tfdb Please mention this paper.

☞In responding to this advertisement mention Gleanings.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
PUBLISHED BY A. I. ROOT
$1.00 PER YEAR MEDINA OHIO

Vol. XXI. DEC. 1, 1893. No. 23.

STRAY STRAWS

FROM DR. C. C. MILLER.

NOW BEGIN to plan for next year.

IT WASN'T RIGHT, Hutchinson thinks, to advertise a three-days' meeting at Chicago and then cut it down to two.

COLIC from eating honey, according to Isaac B. Rumford, in *Success*, may be prevented or cured by eating a bit of cheese.

FEEDING BACK, in R. L. Taylor's experiments, to finish out sections, yielded a pound of comb honey for every 1.7 pounds fed.

PROF. COOK, in *Review*, thinks bee-keepers can have experiment stations in all the States if they only insist on their rights. Let's "insist."

ONLY FIVE of the States had a larger representation at the Chicago convention than Ontario. And it came near capturing the next convention.

BEE-ESCAPES are nice things in some cases. But I don't use them one time in twenty—haven't time. But I use them a good deal off the hives.

MOVED AND SECONDED by Hasty and Hutchinson, that Taylor, of Minnesota, be appointed experimenter for his State. The name works well in Michigan, why not in Minnesota?

HUTCHINSON hits the nail pretty squarely on the head in the following: "I am becoming more and more convinced that we can not put our finger on any one thing, and say, 'This causes bee diarrhea.'"

HUTCHINSON proposes to learn to fight bee diarrhea by learning how to produce it at will. I think I can produce it at will by leaving fire out of my cellars. But the same thing will not work in all places alike.

"CHILL NOVEMBER" was very mild as to its front end this year. My bees flew nearly every day till the 10th—something very unusual. But the 15th brought the thermometer down to 16, and winter came with a jump.

POLLEN IN WINTER. S. Corneil, in *Review*, adduces facts which he thinks abundantly prove "that not only is there nothing gained by the exclusion of pollen from winter stores, but its presence is essential for the health of the bees."

THE *American Bee-keeper* has an article in which the name of Langstroth is entirely omitted among the names of those who have brought into use the movable frame. Better use a footnote, dear *A. B. K.*, to supply the deficiency caused by the ignorance of a correspondent.

QUIET ROBBING is reported a failure on p. 856, and a correspondent of *B. B. J.* also reports it a failure. I wonder what can be the secret of the failure. I've practiced it for years, having hundreds of supers cleaned out without trouble.

JONES HAULED some bees upon a sleigh,
One mild and sunny winter's deigh,
To help a neighbor.
The bees got out upon the weigh.
And made the horses run aweigh:—
'Twas fruitless leighbor.

THE KODAK is getting to be a terror to evil-doers. "Spotters" on the railroad on which I live are now armed with these deadly weapons. If a railroad employe enters a saloon he is afterward shown a neat picture of himself in the saloon, and invited to walk out.

YOUR HEAD'S LEVEL, Mr. Editor, when you say the North American should hold its conventions at a time when some other large gatherings assure low railroad rates. Go in strong on that idea; but then, don't forget that I had the idea copyrighted long ago, and give proper credit.

IT'S A MISTAKE, Hutchinson thinks, to commence a convention without having a program all ready to work from. Easy, friend H. Don't you remember more than one excellent convention in that same city of Chicago where there was less preparation as to program than at the last one?

WAX SECRETION. R. C. Aikin, in *Success*, thinks it takes about four days for bees to get under headway at secreting wax. He counts the beginning of the flow the most profitable time to furnish combs or full sheets of foundation; and the close, the best time to furnish only starters.

THE LOW MURMUR of bees in the cellar is considered by some a "hum of content," and by others a sign of something wrong. In October I heard the same murmur among my hives outdoors. In that case it could hardly have been the sign of any thing wrong, unless that the bees were colder than they liked.

TO WASH SILK. Mix ¼ lb. honey, ¼ lb. soft soap, a gill of gin, and a pint of cold water together. Put the silk on a table or board, scrub it with this mixture, rubbing it in well; then rinse in clear soft water. Shake it as dry as you can; do not wring it. Hang it up by the edges, and, as soon as sufficiently dry, iron it on the wrong side.—*Mrs. Rorer's Cook-book.*

SUCCESS IN BEE CULTURE is the name of the new journal that has supplanted the *Bee-keepers' Enterprise.* But there seems more enterprise in the new than the old. It has some very bright things in it, and in mechanical ex-

ecution it can stand up with the best. It seems Sagely conducted, and I hope it may achieve the first word in its present name.

Hasty advises the *C. B. J.* to leave out the sprinkling of short jokes. Don't you do it, Holtermann. We need more fun. Why, Hasty himself is so bubbling over with good-natured fun that it spices all he says. His articles would be excellent food without the spice, but they're much more palatable with it.

An accident furnished me a strong argument against loose frames, if such argument was needed. By some means a hive was turned on its side, and lay thus for a few days. The frames all settled down in a pile. Fixed distances would have held them in their places. Still, such an accident occurs only once in 32 years.

PREPARING FOR NEXT SEASON.

OLD FOUNDATION AS GOOD AS NEW.

By the time this number of Gleanings will have reached its readers, the bees will have all been housed for winter, or should be, at least, and the intelligent apiarist will be asking himself the question, "What next?" The next thing to be done, it seems to me, is to prepare for next season. He who fails to prepare now for the season to come, often finds the season upon him and he unprepared. The time to prepare is always when we have the *time* to prepare, not afterward. Therefore, when our bees are safely fixed for winter we should go to work in such a way that our "dish" will be sure to be right side up when the "raining of honey" comes next June and July. To this end, all the hives not occupied by the bees should be brought around and repaired if necessary, cleaned of propolis, etc., and painted if necessary. If we do not have as many as we may reasonably expect to use, new ones should be made, so that all will be in readiness at a moment's notice when swarming time arrives in 1894. If we are to use foundation or starters of foundation in our frames, let this foundation be procured and fastened in the frames during the winter while we have leisure. Don't listen to those who tell you that the bees will not work the foundation only as it is new from the mill; for in an experience of years I can not see any difference between foundation fresh from the mill and that which has been stored away in the frames for years, as regards the bees accepting it. To be sure, to me this old foundation looks cold and hard; and, while looking at it these cold winter days, my sympathies go out toward those who say the bees will not accept it; but when next June arrives, and I lift out this same "hard" sheet from the bees, after it has been in the hive an hour, I find it all soft and pliable, and just as good as new, or that which has been dipped in tepid water so as to restore its color, etc., as some advise.

Having the hives all in readiness, put them away where they will be handy when needed, and look after the surplus arrangements next. These should be cleaned of propolis, and repaired where necessary; and if we do not have enough, let new ones be made. To arrive at the number we wish, I have come to the conclusion that I am not sure to secure the best results unless I allow at least room for 150 lbs. capacity to each old colony in the spring, where working for comb honey, or 250 where working for extracted honey. Less than this finds me "napping," about one year in eight, with less money to jingle in my pockets than I might have had. The sections to fill our wide frames or cases should next be procured, made, and filled with full sheets of foundation or starters, as we have elected to do. When filled as above they are to be placed in their holders, and all fixed in readiness to use, so packed that all dust, dirt, and mice are excluded from them.

We now have time to study on any experiments we have thought we should like to make when we were so busy during the last season; and by studying the matter over we shall see what material and fixtures we shall need to carry out these experiments. Much good to the bee-keeping fraternity is often lost by lack of time to experiment just when the "fit is on," and then allowing the thing to die without further thought in the matter. To overcome this tendency I jot down the new things I should like to try when they come to me; and if I do not have time to put them in practice then, I look this "jotting down" over during the winter, and prepare to carry out the plans the next season. If, after carrying out, we find these experiments successful, we should then give them to the world to pay the debt we owe to those who have come before us and prepared the way for our successful practice of the plans they originated. Don't be selfish, and try to keep whatever good you may have found to yourself; for in giving to the world there comes the greatest reward. Above all else in importance is a thorough knowledge of apiculture, and the long winter evenings which are upon us are just the time to gain this knowledge. Get around the back volumes of Gleanings, and other bee-papers if you have them; also any bee-books you may have, and thoroughly read them till what they contain is fully impressed upon the mind, so as to put what you learn in practice the next season, so as to be always advancing, instead of standing still or retrograding. Do this instead of spending your evenings at the store, saloon, or hotel, listening to the idle gossip, or worse than gossip, and, my word for it, you will make a success of bee-keeping which will astonish those about you.

Not long ago, while passing the saloon in our place I saw through the open door one of our would-be bee-keepers standing at the bar, apparently about to treat others gathered around, to that which has the power of not only wrecking any business, but destroying both soul and body. No wonder such a one does not succeed. If you are not interested to an extent sufficient to make you prefer the study of bees to the places named above, I can give no assurance of success; but, on the contrary, I shall be obliged to predict only failure, as all my knowledge of the pursuit compels me to say that the idea that "bees work for nothing and board themselves" is a mistaken one. G. M. Doolittle.

Borodino, N. Y.

A DISCOURAGING SEASON FOR SOUTH CAROLINA.

J. D. FOOSHE REPLIES TO MR. CORMAL.

Friend Root:—I had hoped all along that we should have a good fall for honey, and that we should get enough for the bees to winter on, if no more; but the season is over, and this is the first one that I have ever known when bees had to be fed here to carry them through the winter. I shall have to feed at least 20 or 25 colonies. About that number may make out with what they have, as they were stronger, and not drawn on as were the others. In March, and up to the middle of April, my bees never did better. I had about 60 colonies—40 reasonably good ones, and the rest good strong nuclei. I had more swarms than for several years. They built up rapidly on seven-top turnip, and were in good

shape the middle of April, when high winds set in and blew a heavy gale for about ten days, so that bees lost every day of that time, and nuclei had to be fed. Then prevailing winds made things dry in a hurry; but about the 25th of April we had some of the hardest rains that I have ever known, and they continued to fall at intervals for three weeks; and during that time after each rain it would be very cool for three or four days, and, again, high drying winds, and then drouth for some time; and, again, in June we were flooded—so much so that it was almost impossible to save our crops from grass toward the middle of June. I plowed but two days in three weeks, and most farmers are feeling the effect of it now in short crops. All this made cotton late, which I hoped to get some honey from; but another drouth, commencing the middle of July and lasting till the 10th of August, when we had some rain, caused the prospect to brighten, and bees began to bring in honey about the middle of August, and they made some headway, when, on the 27th of August, we had the notable storm on the coast, which stopped all work among the bees for several days, or until goldenrod bloomed, which is about the last of September. They began work on it, and built up on that and peas until about the 13th of October, when we had another storm with heavy rains, and since that time they have gathered less honey from the asters than I have ever known. During all this time, every nucleus I had was fed, either with sugar syrup or by taking a frame of honey from the upper story of the strongest colonies, which weakened them every time I did it; but I was encouraged all along to think that, when they began to bring in honey, they would build up and gather a surplus, as in former years; but, you see, every time they started, something would come along to discourage and stop proceedings almost. The most singular thing that happened was, after the last storm the bees killed all drones—not one could be found in my apiary the last of October, so I had to give up queen-rearing earlier than usual.

I mention the discouraging circumstances fully, in order to show that bee-keeping, like all other industries, fails occasionally. My queen-trade, amid it all, has been good and profitable; but I had to feed a good deal for it. Many bees in this section have swarmed out, and all box hives are in bad shape. I bought several Oct. 1st, and Italianized; but they had no honey, and they had to be united to go through. With all these discouragements I trust that I am wiser, and shall learn lessons that will profit me. Queen-rearing is a specialty with me, but I do like to have honey to go along with it, as it keeps bees in a normal state, and the business is made easier and more profitable, and better queens are the result.

In November 1st GLEANINGS Mr. Cormal says I indorse the Alley plan of grafting cells to hatch queens. The only part of the Alley plan indorsed is the placing of the strips of comb on the bars. The grafting process belongs to Mr. Doolittle. If I remember rightly it was he who first gave the plan of transferring larvæ to old cups, and afterward conceived the idea of making cups from wax. This comes nearer to natural cell-building than any thing else I know, in that the larvæ grafted are of the same age, and hatch out more evenly than by any other plans given, and more uniform queens are the result, which I consider a great item in cell-building. We may let a colony choose its own larvæ, even from our best queen, which larvæ we always use in queen-rearing, and some larvæ will be too old; and if bees are left to themselves I find they always select larvæ from one to two or three days old. I have always thought, and still think, that the only difference between queens reared from natural swarming and those grafted by the Doolittle plan is that, in natural swarming, the larva is fed, beginning with its existence in a larval state from the egg, which gives it, say, from 12 to 24 hours the advantage. The younger the larva can be transferred, the better; and that can hardly be done under 6 to 12 hours after it is hatched. I find, from my observation, it makes no difference as to the receptacle it is placed in, whether worker comb, drone comb, or wax cup. The bees make the base, and draw out, tapering as they go, until finished. I find that the drone-cells for cups with royal jelly are more convenient than any thing else that I have ever used, and I am highly pleased with them, as it saves me making wax cups, and I get just as fine queens as from any thing I have ever used.

I think Mr. James Cormal makes an unjust criticism on my article recommending drone-cells for queen-cups, in which he uses the word "disclaimer." I am sure that I have been charitable, and have not denied others the right to their plans, but gave mine for what they were worth. You are exactly right in your comment to his article. The receptacle for the larvæ, no matter whether worker-cell, drone-cell, or wax cup, the bees begin at the base, and enlarge, and then contract to a proper size, as in the natural cell. J. D. FOOSHE.

Coronaca, S. C., Nov. 11.

RAMBLE 97.

WITH ELISHA GALLUP.

While upon the photographic journey, as recounted in my last ramble, I kept an eye out for things of interest in the line of bee culture; and, seeing a large number of nucleus hives near Arlington, I ran out to see them, and counted over 180; saw a hive that had been upset by skunks; felt a cross bee on my ear, with about a dozen more trying to get at my face. I then concluded I had seen and felt enough, and ran back much faster than I ran out. After we pass some distance down the Santa Ana River we enter Orange County, and soon find the county-seat, Santa Ana, and it is one of those beautiful towns we so often meet in California. Its location being only ten miles from the seashore, with no intervening hills, it has a very uniform temperature all the year round.

Orange County is not very pretentious in size, but in its products it boasts of things as immense as those produced in any portion of the State. In the interior we find the products run more to fruits and barley, and a system of irrigation; but in the western part of Orange Co. there is as much diversity of products as you will find in the less favored Eastern States.

BOG-SHOES FOR MAN OR BEAST.

Large cornfields gladden the eye, and the growth seems to vie in height with the telegraph-poles. We also see green fields without irrigation, for there is moisture enough for the

natural growth of alfalfa and other grasses, and the fields are green all the year round.

The most productive portion of the county is known as the "peat lands." This large tract of land near the ocean is composed of the richest of peat; and, while the surface is dry enough to be tilled, there is plenty of water at a little distance below the surface; in fact, the ground over much of this tract is so soft that the crops have to be drawn out upon a sort of sled with broad runners, and the horses are provided with bog-shoes which are large cushionlike arrangements strapped to the feet, and which prevent the horses from sinking.

Garden-truck of all kinds is grown to perfection, and it is a common practice to plant a field to potatoes, corn, and pumpkins, and have the three crops growing at once, and yielding large returns. The lover of market-gardening would surely have all of his enthusiasm aroused by a visit to the rich peat lands, where no artificial manuring is required to attain great results.

The young American boys who seem to be worthy of emulation are the Miner brothers, who have, during the past season, obtained 20 tons of honey.

While in Santa Ana I thought it my duty to hunt up Mr. Elisha Gallup, an old-time bee-keeper, whose writings are still remembered by old-time bee-keepers. I found him in his cosy home in the suburbs of the town. He was divested of coat and vest, and seemed to be enjoying the climate. His age of 73 summers seems to rest lightly upon him; and but from being partially bald, and his remaining hair gray, he would look quite young. I told him that I had hunted him up in order to have a bee-talk if he was at leisure.

"Well," said he, "I am here now; fire away." So we exchanged shots for about an hour.

Mr. G. does not at present manage bees; but one can readily see that he has the old love for the pursuit. I found the father caring for his three little children, the mother having passed to the other shore a few months ago. The old-

ELISHA GALLUP.

The average bee-keeper, in passing through Orange Co., would think, from the appearance of the hills in the distance, that it would not be much of a honey-producing county; but from reports during the present season it will hold its own with the interior counties. The best quality and largest amount of honey is obtained in the foot-hills on the east side of the county, while a darker grade of honey is obtained in the low lands. As we near the coast, bees swarm to a greater extent than in the interior, and quite a number make it a business to catch such swarms and start apiaries, or sell them to those who wish to start a bee-ranch.

When entering the county through the foot-hills we catch glimpses of apiaries now and then in the canyons; and one of these, I was informed, belonged to four Mexican boys. It is seldom that a Mexican can get up energy enough to run a bee-ranch; but these young fellows, having got their hands in, and having young American bee-keepers to emulate, we should hope to see them make a success of it.

est boy is six years old; the next four, and the youngest a girl two years old. All are bright and extremely well-behaved children. The oldest came in from school, and the father remarked that he stood at the head of his class. The second boy was intent upon telling me about his pet "yabbits," which a kind lady had given him. Mr. G. keeps a few coops of poultry, and finds recreation in that and in caring for the little park at the railroad depot. Before I left town the next morning I photoed the residence and the occupants; and though it was early, and the usual morning fog was hanging over the city, I hope our artist can reproduce it for our readers.

There are many thriving towns around Santa Ana; and when in them, if you meet a genuine Californian you would think from his description that his individual town is the paradise spot of the earth. The water there is purest, the air most bracing, the fruit more abundant and better flavored; the boys best behaved, and the girls best looking. Some of these old-

timers will make you feel like settling down near them for life.

Santa Ana and some of the surrounding towns are supplied with pure artesian water; and, all other things being taken into consideration, a home in any one of them would result satisfactorily to the home-seeker. The soil is also adapted to the cultivation of the sugar-beet, and new factories are projected. The pioneer factory at Chino is a paying institution, and the beet-farmer would not exchange his lands for fruit or grain lands.

Altogether, Orange County is a desirable portion of California; and between the sugar and honey industries it ought to be one of the sweetest. With good soil, good water, genial climate, and a good class of people, what more does a country need to bring prosperity? is the question presented by the RAMBLER.

BEE-CAGE CANDY.

PLAIN DIRECTIONS HOW TO MAKE, FROM MRS. JENNIE ATCHLEY.

[The following letter, directed to Mrs. Atchley, was forwarded to us by her with her answer. We are very glad to give place to the whole.]

Mrs. Jennie Atchley:—As I have seen your advertisement or address in GLEANINGS, I take the liberty of writing to you, and inquiring how to make that bee-candy, as I have some colonies of bees that have not enough honey to winter on, and should like to feed them in the cellar, with the candy. If you will be kind enough to tell me how it is made I should be ever so much obliged. G. L. UNTERKIRCHER.

Manchester, Mich., Nov. 6.

Friend Unterkircher:—As promised, I will give a full description how to make candy, etc. To make a candy to ship queens with we should use nothing except the finest of confectioners' sugar, and thoroughly pulverize all lumps, and use honey that has been boiled or brought to the boiling-point; but be sure not to scorch the honey. Now work the sugar and honey together until it will stand up of itself; and if you will work it thoroughly it will be tough, and hold moisture. I use boiled honey to prevent the candy from granulating (honey that comes from the solar wax-extractor is good), for we have lost a number of queens on long journeys by the candy granulating, and it is a very nice job to get real *good* candy every time.

Now, if you wish to feed your bees only, common powdered sugar will do. Make as above, but any extracted honey will do. If you have your bees in a cellar you can lay a good chunk of candy right over the cluster, and spread it out thin till it is flat, or not more than an inch thick, and lay the cake on the frames over the bees, and they will take it down.

Then, again, you can use common coffee sugar and no honey, only use a little cream of tartar or a lump of tartaric acid to keep the candy from going back to sugar. You can make the candy hard, and, when it will snap by dropping it in water, you can pour it right into a frame, made ready by laying it on a greased paper on a table. It is best to use a frame that has been wired the same as for foundation, as the wires will hold the candy. If you wish, fill the frame full, and, when cool, hang right up to the cluster, and they will take the candy as they need it; and then this last candy will not start brood-rearing, as the former is likely to do, which is not good to stimulate your bees while in confinement. Then in the spring, if you should not wish to take out the frame that contained the candy, the bees will build a comb in it, and all will be well. See A B C of Bee Culture for further information. JENNIE ATCHLEY.

Beeville, Tex.

THOSE OLD BEE-BOOKS.

HUISH VERSUS HUBER.

We have now come to the last book which it will be desirable to examine in particular. A few remain, but I shall do little more with them than to give their names. I make this statement for the benefit of "The Stinger," who fears the books will be too "ancient" before I get through with them. I was just contemplating borrowing those 1004 old ones owned by Mr. T. W. Cowan, but now I guess I'd better not.

The book in question is called "Huish on Bees." It was published in London in 1844, and printed by that prince of good printers, H. G. Bohn, York St., London. It has 450 pages, 6x3; and for clearness of print and general beauty it is a pleasure to a printer's eye. It was written by Robt. Huish, F. Z. A., of England, one of the most eminent bee-men of his time.

In my last I put Huber forth in the light in which he is generally viewed, without committing myself to any of his doctrines. This book, however, is the most powerful opponent of Huber's teachings; and on nearly every page the reader sees that the blind old naturalist is pursued by a critic as remorseless as death, as shrewd as a lawyer, and as unsparing as a tiger. Every weapon in the arsenal—sarcasm, ridicule, contempt, dislike, and sneers—is brought to bear with as much vim and enthusiasm as clubs come down on every opposing head at the traditional Donnybrook Fair. And considering the fact that Huish wrote about 50 years later than Huber, I can't help feeling that he has the advantage of the latter in most cases. It is to be regretted, however, that the intense antipathy felt in England in those days against France accounts for much of the acerbity displayed by Huish toward his dead opponent, although the great Englishman was an honorary member of the National Institute of France, and seems to have understood French, making many quotations in that language.

The introduction to the book is a superb summing-up of the history of apiculture; and to show how Mr. Huish felt toward Huber I make a liberal quotation here. True, it is only a hair of the dog; but it gives, after all, a good general idea of the animal:

> At the close of the eighteenth century, Mr. Huber, a blind naturalist, appeared, who directed his servant, or his servant directed him in those researches, for the supposed verity of which a surreptitious fame has been awarded him, and which has placed him on the pinnacle of apiarian science, an eminence on which he has been undeservedly elevated by a host of commentators, encyclopedists, editors, and compilers, who have been led away by the apparent originality of his pretended discoveries, but who never deemed it necessary to devote any portion of their time or ability in the investigation of the principles of that theory, of the truth of which they expressed their unqualified assent. If, in the course of the ensuing work, we may have laid ourselves open to the charge of having applied the lash of ridicule too severely upon this falsely celebrated naturalist, we can only answer, in extenuation of that transgression, that we have been encouraged to the commission of it by the thorough conviction, arising from an experience of above forty years, that the majority of the vaunted discoveries of Huber are the result of fiction and delusion, founded on obsolete theories and antiquated prejudices. The man who will assert, that, from his own evidence, he has heard the queen-bee speak

the French language,—that he has seen the queen-bee place herself in such an attitude as to strike the bees motionless,—that he has seen the queen-bees for six consecutive nights engaged in a duel,—that he has seen fortifications erected by the bees; we affirm, that the man who will tell us, and call upon us in a dogmatical tone to believe him, that ten hives will warm an apartment, and twelve a greenhouse if the bees be well shaken,—that the queen-bee is sometimes afflicted with the ague,—that he has seen a bee construct a cell from the foundation to the coping, with numerous other similar fooleries, possesses but a very slight claim indeed to the character of a profound or accurate naturalist. We are bold enough to declare, that the discoveries of Huber are not only improbable, but even *impossible;* and it is on the basis of that knowledge that we have unequivocally expressed our dissent to the principal points of the theory of Huber. We have, however, fearlessly thrown down the gauntlet to the advocates of Huber; and although we may stand single-handed in the contest, we fight under the banners of truth, and as such we despair not of the victory.

Two more pages like this follow; but the lash falls upon later writers who have "blindly" followed Huber, even against the evidence of what he did not have—eyesight.

The disputes between the old bee-masters seem to have been entirely in regard to the bee itself, and especially the sex of the worker. Huish says he is positive that workers have nothing to do with the procreation of their kind. He says, "We deny in the most unequivocal manner that any ovarium exists in the common bee." From this he argues that an egg laid by a queen will invariably produce a worker (if it is a worker egg), and that no amount of "royal broth," as he sneeringly translates the original French word, can make a queen from such an egg, any more than a hen's egg can produce a turkey. Certainly here was a far bigger mistake than Huber ever made; for workers certainly do have what might have been an ovarium, or egg-sheath, if properly fed with royal jelly, and given plenty of room. Here is a wonderful instance of an insect undergoing a radical change by a change of food.

Huber claims that some bees secrete wax, while others make comb of this raw material. Mr. Huish ridicules this as contradictory, by saying, "That is, although the silkworm spins its cocoon, still it makes no silk." The point is not well taken. If some silkworms were known to take cocoons that other worms had furnished, and were to draw these cocoons out into handkerchiefs, the analogy would be complete. Bees do not secrete wax in the shape of comb, but it is elaborated by the bees into cells after secretion; and that bees of one age might do one thing while others do the other is not absurd of itself — at least, not so hard to believe as that a bee manipulates no wax secreted by another bee.

Huber's theory, that workers lay eggs that develop into drones, is objected to by Huish on the ground that, in that case, we should have some 15,000 females, all laying male eggs, and these females rendered fertile by females! — a bad state of affairs truly. Mr. Huish distorts Huber's meaning in places, and makes fun of the idea that what might have been a queen was distorted into a worker by circumstances connected with its egg-life. It seems sad that these men should have been so widely apart, when a full knowledge of what is now called a "laying worker" would have reconciled most of their discrepancies on this score. Of course, the dispute was all on one side, for we do not know that Huber ever heard of Huish, for the latter must have been very young, perhaps not born, when Huber's works were first printed.

As an instance of how greatly Mr. Huish misunderstands Huber, I can not refrain from mentioning the following: Huber speaks in one place of having seen combs 8 inches *wide*. Mr. Huish, understanding *depth*, or thickness, for *width*, immediately makes fun of comb with cells 4 inches in depth, as that would necessitate bees 4 inches long to fill them!

To-day the efforts of bee-men are directed almost entirely to the management of the bee, with the view of getting the most honey; and in this respect our bee-books present a complete and refreshing contrast to the old ones I have described. True, there are some things about bees we should like to know. For instance, do bees hear? do they make real honey of all sweet substances which they consume or imbibe? and the use of some of their organs is not yet, I believe, fully settled. But these are not now divisive questions. We are discussing differences in perforations in zinc, so small that a hair seems like a beam in comparison, and in settling on the best size of a frame within the thirty-second of an inch.

For vigor of language, Mr. Huish's book is a marvel. He draws one on by his energetic logic with almost irresistible force. Of course, we of to-day can take a bird's-eye view of the contested points, and sift out the chaff from the wheat, and read the arguments with perfect impartiality. Perhaps the time will come when we shall all see our points of difference in a new and better light, and find that we have all been partially right — that the shield was red on our side and blue on the other; when HU$^{\text{BER}}_{\text{ISH}}$ shall have as much in common in love as in name.

A fine picture of the author, in copperplate, faces the beautiful title-page.

Medina, Nov. 15. W. P. Root.

THE NON-USE OF THE BEE-ESCAPE.

HOW AN EXTENSIVE BEE-KEEPER REMOVES THE BEES.

Agreeably to a call for bee-escape experience, from the editor of Gleanings, I would say for one that I gave the article in question a trial on a small scale; and, while I have no doubt of the efficiency of the invention, and know that there is a very great deal in getting used to a thing, I think, as in the beginning, that, while it might pay some people, it would not pay me. I use shallow frames in the cases (my crop is nearly all extracted), and tier up empty combs on the hives, case after case, until the close of the honey season, and then extract. My *modus operandi*, briefly given, is as follows:

I have a hive-cart similar to the California styles illustrated in back numbers of Gleanings. Provided with a large-sized Bingham I begin at the end of a row of hives, pry off the cover, start the bees down with smoke; pry up the top case; dislodge what bees I can, *a la* Heddon, with a shake in front of hive, and set the case on the cart. I then remove all the cases in this way (if any contain brood I leave them until fall), and replace the cover on the hive; repeat this operation until the cart is loaded. At convenient locations in the apiary I set bee-spaced bottom-boards, and on these I pile my cases, bees, honey, and all, to a convenient height, and place on top a cleated board, with a large wire cone opening outward in the center of the same, the hole at the apex the right size to permit the passage of a single bee; the bees rise to the light, pass out, and return to the hives. If robbers are troublesome I throw a cloth over the cases on the cart. A better plan than this is, to pile the cases in the honey-house at once near a screen - covered window, at the top of which are arranged bee-escapes. In a large apiary, however, there is seldom room for this last way.

The writer has practiced this method for over 20 years; and with no help, ofttimes, but a small boy in the honey-room, has removed the honey from 75 to 400 colonies each year. After the combs are emptied they are at once returned to the cases, and in the evening the cases are replaced on the hives, to be cleaned up and be ready for the fall crop, and safe from the moth, even if the fall crop fails to put in an appearance.

Now, Mr. Editor, I believe in all improvements that improve; but, candidly, I would not accept as a gift a full equipment of modern bee-escapes for my apiary. To people who brush the bees from the large frames, or who use only one case per hive to extract from, or to any one who likes to "tinker" with bees, or to the section-honey people, the escape may have a pecuniary value; but with my shallow frames with close-fitting end-bars, I say, not any for me.

In good seasons my yield is often from 125 to 160 lbs. per colony, spring count; and to raise all these heavy cases from the brood-chamber just to place an escape-board on the same, and then replace the cases, where one operation would do as well—yes, better—in the first place, and with a smaller percentage of crushed bees, doesn't strike my ideas of economy of labor very favorably. I have by this method removed ton after ton of honey per day, always choosing the days when the bees were flying freely; and although the time chosen is the close of the season, so that one extracting will do in the place of two or three, I have never used for this purpose a tent over the hive (we are provided with your folding bee-tents, and would not be without them, however, for some other operations). The fact of the matter is, a practiced hand will, by this method, remove the honey and place the cover on the brood-nest in less time than any one man could brush the bees from the combs, and the hive is closed, and you are away to the next one before the robbers get started. Another thing, this method doesn't hang fire. There is no escape to get choked or clogged by dead bees, and no smothering of the workers. Of course, it is a self-evident fact that our cases must be bee-tight everywhere except at the cones, to prevent robbing; but we take it for granted that such is the case with others as with us.

Monroe, Ia., Nov., 1893. J. A. NASH.

[One objection to your plan occurs to us, and it is this: By the shake-out plan there will be a few bees left, and these, according to our experience, will be for the most part young bees. Now, when you tier up these cases in various parts of the apiary with a bee-escape, they (the young bees) will be lost on emerging from the cones. Perhaps in telling how this is with you, you would also be glad to tell us why you prefer the shallow brood-chamber. As you are a practical bee-keeper we should be glad to hear from you farther, as we believe you could give us many practical hints.]

HOFFMAN FRAMES DISCUSSED; V EDGES.

DR. MILLER HAS DECIDED THAT HE WANTS NO LOOSE HANGING FRAMES.

Quite a number of my hives are getting too poor to be longer used, and well they may, for most of them have been in use 25 years or more. If they had been kept well painted, no doubt they would now be in a good deal better shape. But I think it possible that they are right who think that a hive without paint is better for the bees. Even if a painted hive is just as good for the bees, I doubt the economy of painting, for wouldn't the amount of painting needed in 25 years cost more than a new hive-body? But I suspect I made a mistake in not having the covers painted. A painted cover is less likely to warp and check.

Most of my frames are 18 by 9. Years ago I got started in that size, having bought out J. Vandervort, the foundation-mill man, when he left Marengo. I don't think the difference between that size and the standard Langstroth size amounts to much; but while changing I may as well be in fashion with the rest of the fraternity. So practically I am to adopt a new hive; and as it will probably be for life, it will readily be seen that I am deeply interested in the whole question of hives and frames.

Most important to decide is the frame. As to size, 17⅝ by 9⅛ seems so generally accepted that I feel pretty safe in adopting it. I should prefer something standard to something that is better, if the latter is only a very little better. But after settling on the size, the rest of the way is not so clear. There are several things to be decided, and there is no long-settled standard. As to some things I am pretty well settled, but not so much so as to others.

I feel very sure that I don't want a loose hanging frame. I've tried them very thoroughly for a good many years. With loose frames, exact spacing is an impossibility. Even approximate exactness is not compatible with rapid handling. Space too far apart, and you have brace-combs in plenty. Space too close, and the space is filled with propolis. Then the spacing differently at different times makes trouble. Here's one of the troubles that's not always noticed: Two combs facing each other are filled with honey, and sealed. Then the frames and spacing are in some way changed, so that there is quite a space between the sealed surfaces; and, the harvest crowding, the bees commence the new cells directly on the sealed surface. That makes it just the same as so much wood under the first capping, for the bees will never uncap it. With loose hanging frames, no matter how carefully spaced, if the hive be tipped up and a look taken at the bottom-bars, it will be seen that the spacing is any thing but regular, some of the bottom-bars having nearly an inch space between them, and others touching. At least, that's the way mine are.

I know there are some who prefer to have brace and burr combs, but I think the great majority don't want them. I'm sure I don't. They seem to me dauby, wasteful, and troublesome. With brace-combs you can not handle frames rapidly without killing a great many bees. There may be something in the argument that bees will more readily go up into the supers if plenty of waste combs are built between. But bees can be induced to go into the supers by better means. As exact spacing seems to be necessary for the prevention of braces and burrs, and as there is no practical way to have exact spacing with loose frames, that seems to settle the question in favor of fixed distances.

How shall fixed distances be secured? It is, perhaps, harder to be settled on that point than on any other. You, friend Root, have settled upon the improved Hoffman. That makes a strong argument in favor of adopting it, for two reasons: First, I am sure you have done so after careful thought as to what is best; and, second, I would rather have what is likely to be standard and kept regularly in stock. But after making a pretty fair trial of the Hoffman, and, to a less extent, the improved Hoffman, I must say I am not greatly in love with the improvement.

The improvement consists in having a space between top-bars the entire length, thus having less chance to kill bees, and having the frames rest on folded tin so as to slide easily. Theoretically that looks like an improvement, but in practice it has not seemed so. Whatever the reason may be, I find it as easy to slide the old-fashioned Hoffman top-bars on the wood rabbets—at least, it seems so to me. The number of bees killed by the ends of the top-bars, where they touch, is not very great at most; and, being thus closed, there will be no propolis deposited on the rabbet. Will not the little channel, back of the tin, be in time entirely filled up with propolis? Unless I see some objection other than I now see, I want the ends of the top-bars to be close-fitting.

The improved Hoffman has the upper ends of the end-bars close-fitting, and one side brought to a sharp edge, no doubt with the view of killing fewer bees. Theoretically, one would expect the angle thus formed to become filled with propolis. I understand there is no such trouble, practically, at Medina. There is at Marengo; and if, with time enough, that angle is not filled full at Medina, I shall be greatly surprised; and, when thus filled, it will be worse than having both edges of the top-bar full width, because a surface of bee-glue is worse than a surface of wood.

With frames spaced 1⅜ from center to center, I feel pretty safe in saying that the main part of the top-bar should be 1⅛ wide. The reasons, I gave not long ago in Gleanings; namely, that, with ¼ inch between top-bars, there was the greatest freedom from brace-combs.

I think I want the top-bar ⅞ thick. It seems to be quite generally conceded that a thick top-bar helps to prevent brace-combs. Let me say here, that I believe that the prevention of brace-combs goes a long way toward preventing burr-combs over top-bars; for if brace-combs are started between top-bars, it seems easy to continue them upward as burr-combs.

Even if a thick top-bar should make no difference as to braces and burrs, I still think there is good reason for having ⅞. An inch might be better, but I suppose it would be a good deal more expensive, and ⅞ will do very well. One reason for a thick top-bar is, that a thick one will not sag. And if your top-bar sags, away goes exactness of space between top-bar and whatever is placed over; and without exactness of space, away goes exemption from burr-combs. Another reason for a thick top-bar is, that I believe it is not well to have sections too near the brood-combs. When I used wide frames to hold sections, I practiced putting a frame of brood in the upper story between two wide frames, the more readily to get the bees to work there. If left there till the bees commenced sealing the sections, they were always sealed dark. So I believe it is well to have the sections farther from the brood-combs by means of a thick top-bar.

So, with my present light it seems to me that I want the old-fashioned Hoffman frame, with a top-bar 1⅛ by ⅞. I shall look with great interest for foot-notes at the bottom of this; and if I am wrong in any of my views, I am willing—at least a little bit willing—to be converted from the error of my ways by the editor or any of the friends. C. C. Miller.

Marengo, Ill.

[One of the bitterest pills that an editor has to swallow is to have something in print out of place. Well, it seems we dictated two footnotes to two consecutive articles from Dr. C. C. Miller. By some hocus-pocus they got together and were stuck on the article that appeared on page 845 of last issue. The major part of the footnote belonged to the article above. As both articles were on kindred subjects, and having read both of them at the time of having made the footnotes, we did not read the one that appeared in Gleanings in *connection* with the double footnote. The reader will, therefore, find the answer to Dr. Miller's article above on page 846 of our *last* issue. We would have given a cooky to see Dr. M. scratching his head, trying to make out what that footnote had to do with his article. If he and our readers will forgive us this time we will promise not to do it again.]

THE NORTH AMERICAN BEE-KEEPERS' CONVENTION AT CHICAGO.

REPORT CONTINUED FROM PAGE 850, LAST ISSUE.

By E. R. Root.

MORNING SESSION, SECOND DAY.

First in order was a paper from R. F. Holtermann on

THE PRODUCTION OF COMB HONEY.

He regarded, as of prime importance, the man and the locality. One in a poor locality could not compete with a bee-keeper in a good one. As to the hive there was a great diversity of opinion and great diversity of conditions. While he would not lay down any particular hive, he considered any great deviation from the Langstroth hive and frame a mistake. As to the super, he would like an arrangement that would protect all four sides and the upright edges of the sections; but as it was not practicable to insert and remove sections from such an arrangement, he preferred the section-holder device—that is, a single-tier wide frame, without a top-bar. From this the sections could be removed easily; and as the sections came out clean, he preferred it. As to the size of section, that depended upon the convenience of the market, and what the supply-dealer recommended. All of these pointed toward the 4¼x4¼. So far this was easy to decide, but not so the width. In Canada, 95 per cent used sections 1⅝ inches wide; a few 1⅜, 1½, 1¾ and 1⅞; but the demand was increasing for narrower sections. As to the bees themselves, he would not go in so much for beauty as for business. He considered it a mistake for queen-breeders to run so much toward popular demands. Regarding the management, the bees should have plenty of good stores in the fall of the year. Hives should be leveled up with a spirit-level. The greatest cleanliness should be observed. The bottom-bars and top-bars should be scraped, and only such stocks as have bright clean combs should be used. He would use full sheets of foundation, and let the bees swarm, and thought this latter especially was an important factor in the production of comb honey. In the brood-nest he would use starters and hive on these. It was a mistake to try to discourage swarming. No apiary, he believed, should be run entirely for comb honey alone. At the close of the comb-honey harvest the extracting-supers should be put on, and thus avoid unfinished sections.

Some discussion arose as to the advisability of hiving on starters. R. L. Taylor thought we did not want to use them for comb honey. Referring to his experiments in the *Review*, he said that they showed it wasn't profitable. Mr. Holtermann urged that one experiment could not be taken as absolute, and Mr. Kretchmer thought that the honey-flow made quite a difference. N. D. West agreed, and added that he used to favor starters, but preferred now to hive on five combs. Some one in the convention, whose name we did not get, said that Mr.

W. talked like a bee-keeper of only a few colonies. Mr. West was promptly asked how many colonies he had. "Four hundred, in three or four out-apiaries." This raised quite a laugh at the expense of the other bee-keeper who had just spoken. Mr. E. T. Abbott, referring to the experiments of Mr. Taylor in the *Review*, could not see the use of being so exact, and thought the taking account of the small fractions of an ounce all nonsense, and a waste of time. Mr. Taylor and others insisted that we must have exactness, so as to compare results.

REPORT FROM THE AUSTRALIAN DELEGATE.

Although this convention was represented by bee-keepers who had come great distances, none had come further than J. W. Pender, a delegate from the Hunter River Bee-keepers' Association, in Australia. At this point in the proceedings the president called on him for an address, to which Mr. Pender kindly responded. It afforded him no little pleasure to meet American bee-keepers, and to have the pleasure of meeting them at this time, in such a representative gathering. As to the bee-keepers of his own country, he was happy to say that they were following after American methods. The Langstroth hive and system had been adopted almost exclusively. As to a country for bees, he believed they had the best in the world. The resources were such that, in three years' time, he thought they could supply the markets of Great Britian. They had in profusion all the great honey-plants of the world, such as white clover, lucerne (or alfalfa), basswood, a great variety of gum-trees, eucalyptus, besides a large number that were peculiar to their own country. The honey was of the first quality—indeed, was so white in color, and so mild in taste, that the buyers in London were suspicious of it—that is, they thought it could not be pure—that it must be sugared. They produced almost exclusively extracted honey, because comb honey, owing to their hot climate, would break down in shipment. Their bees could gather honey nine months in the year, and the average per colony was over 200 lbs., besides increase. One apiary of 17 colonies produced 7000 lbs. of honey, and increased to 90. His own apiary of 40 colonies yielded 960 lbs. in 14 days. A letter of a later date says that this apiary of 40 colonies had produced 3700 lbs., and he expected to get 2000 lbs. more yet. All of this would be obtained inside of 90 days. As to price, they realized about 8 cts.

BURR AND BRACE COMBS.

This was the subject next under consideration. To avoid confusion, President Miller defined *brace*-combs as those that are built *between* the top-bars, and that *burr* combs were those that were built *between* top-bars and the next set of frames or cover. The question was asked, how many did not care for burr and brace combs. The discussion showed that, while a few did not, the great majority did object to them. Opinions varied as to how they might be dispensed with. Some thought it not necessary to have thick top-bars; that a ¼ inch bee-space between frames and the next set of frames or cover, and a top-bar not less than an inch, or, better, $1\frac{1}{16}$ inches, would prevent brace-combs; but it was urged that correct bee-spaces could not be maintained unless top-bars were thick enough to be proof against sagging, and that thickness had something to do with the matter. Testimony was not wanting, to show that the wide and thick top-bars did almost entirely prevent brace-combs. The question was then asked, how many thought honey-boards necessary. A show of hands developed a vote of 39 for them and 57 against them. The president here remarked that a large change had taken place among the members of this convention. It was formerly held that the honey-board could hardly be dispensed with in practical apiculture; and James Heddon, on the floor of this convention a few years ago, had said that, when a brick might be thown up and not come down, then and only then could the honey-board be dispensed with.

AFTERNOON SESSION.

The discussion on the subject of burr and brace combs was renewed. Mr. Alpaugh, of Ontario, was one of those who held that a ¼-inch horizontal bee-space, with a top-bar one inch wide, would largely do away with burr-combs; nothing would entirely prevent them. When the question was asked as to how far this opinion might be shared by others, 21 held up their hands. Others urged that exact spacing had largely to do with the matter. In response to the question as to what was the right distance for spacing, the general opinion seemed to be for 1⅜ inches, although some preferred 1¼. President Miller called attention to the fact that but little had been said regarding *brace*-combs—those bits of wax between the top-bars. One thing he knew—that ¼ to ⅜ space between the bars made all the difference from none to plenty of brace-combs. He had also found that a top-bar ⅞ deep was essential in preventing both burr and brace combs. He had tried the thinner top-bars, but found them not as satisfactory.

We next listened to an address by T. G. Newman, on the subject of the scope and work of the National Bee-keepers' Union. At the last election of officers the constitution had been amended in such a way as to allow the Union to exert its influence and devote its resources for any purpose in the interest of the pursuit. Its powers were circumscribed only by its available funds, and it remained, therefore, with the Advisory Board to determine its legitimate work. Prominent among the later suggestions was, that the Union should assume the aggressive, and prosecute adulterators. Much as he approved of that sentiment, he was compelled to admit there were difficulties to be encountered, because of the diversity of laws in several States. What was needed was a general law, enacted by the general Congress, against the adulteration of all kinds of food, applicable to every State. Until this was done, he feared we should labor in vain. Another difficulty was, that the analyzation of honey by chemists could not always be relied on. The reason of much of this confusion lay in the fact that honey from different localities varied. He was glad to notice, however, that the professors themselves were endeavoring to overcome all difficulties. Another phase of legitimate work for the Union was, to make its influence felt in legislative halls in preventing unjust enactments; and test cases in every State, where suits were begun against bee-keepers, were desirable. The moral effect of the Union was wonderful. Lawyers, judges, and juries, as well as quarrelsome neighbors, were all influenced by the fact that an organization stood ready to defend us. In an existence of only eight years the Union had won victories to be proud of. It has compelled the courts to render just and fair decisions, and has won valuable precedents.

Prof. H. W. Wiley, Chief Chemist of the Department of Agriculture, Washington, D. C., was present, and was called upon. He thanked the bee-keepers for the kindly interest they had taken in his work. He had recognized that there were two great points necessary for success; first, the production of something; and, second, a market. While a few may keep

bees for love and pleasure, the great majority kept them for profit; therefore the maintaining of a good market was of prime importance. While he could not do any thing in the way of helping the matter of production, he could assist in finding a market; that is, he could prevent, to some extent, competition, by pointing out the adulterated fabrications on the market, and warning consumers against their use. If bee-keepers knew how much they had been cheated by having these mixtures come in competition with their pure goods, they would be surprised. Three years ago he and his associates had purchased in the open market a variety of samples of liquid honey, and found 45 per cent of them glucosed. Glucose was the principal adulterant, and the detection of this article in honey was absolutely certain. Some kinds of plant-lice honey, and certain fabrications made up of sugar fed to bees, might not in all cases be recognized; but the chemists were working on this problem, and would have the matter settled soon. He did not regard sugar syrup fed to bees, and afterward taken as honey, as a pure article. He for one would call it adulterated. In conclusion, he begged to assure the bee-keepers that his scientific brethren would keep pace with the work. He for one would leave no stone unturned to detect every possible adulteration which could be practiced, and thus give to the bee-keepers a pure and open market.

Some little discussion followed the address of Prof. Wiley, in which the matter of Mr. Muth's honey being classed by the chemists as adulterated was brought up. Mr. Muth himself did not have much faith in the analyses of chemists. He had been in the honey business many years, and felt confident that he had never sold nor put up under his labels any thing but the pure honey. It was shown, however, that the samples of honey reputed to have come from Mr. Muth, and which was pronounced by the chemists adulterated, had a spurious label; and some held the view that, as Mr. Muth had established a reputation for honest goods, unprincipled glucose-mixers had counterfeited his label. The feeling in the convention seemed to be strong that, whatever the chemical analysis might show, Mr. Muth himself would put up and sell only the pure honey; and that, if the analysis were correct, Mr. Muth himself had been imposed on by unprincipled parties who had copied his label and name.

At this point the president did a very unexpected thing; but all is well that ends well. He said that, as Mr. Newman, formerly of the *American Bee Journal*, and Prof. Wiley also, were present, between whom differences had formerly existed, it was a grand time to effect a reconciliation in open convention; and thereupon he introduced Mr. Newman to Prof. Wiley. They shook hands amid the enthusiastic applause of the whole convention. Although antagonistic feelings may have existed between bee-keepers and Prof. Wiley, the last vestiges of them, I am happy to believe, had almost wholly vanished at this time. The professor feels that he made a mistake in starting the comb-honey canard, and gave expression to that sentiment at the meeting in Washington. The members of this convention, after having heard him, I think, begin to understand him a little better; and that, so far from being their arch-enemy, he is disposed to do all in his power to give every assistance possible, with all that his position signifies.

We next listened to a paper read by Sec. Benton, from Samuel Simmins, of Mapassa Villa, England, on the subject of "Swarming, and the Prevention of Swarms." First of all, the writer said, it is a natural instinct, whereby young queens are secured, and new homes are formed. While locality had something to do, also, with the desire for swarming, he considered the general neglect of the apiarist in having poor and crooked combs, where cells could be easily started, had more to do with it. The usual plan for prevention, where comb honey was the object, was to put on the sections before the swarming season had been reached; but this was only partially successful. When running for extracted honey, the problem was far more simple, providing there were plenty of empty combs, and an extra set of brood-chambers; but, after all, prevention was not always secured by such unlimited space. One trouble was, that bee-keepers kept queens that were too old. Young queens should be given, and that during the fall, and not during the time that nature usually gives them at the time of natural increase, and when the bees can least afford to make the change. The plan that he advocated principally in connection with having young queens, was, to put an empty brood-chamber *under* the usual brood-chamber, before the latter became crowded. The frames in the lower chamber had only ¼-inch guides, and surplus apartment was worked as usual above the brood-chamber. Anticipating that some would urge that they could not get the bees to work above with so much room below, he said he had never found the least difficulty.

Quite a little discussion followed the reading of this paper. H. R. Boardman asked the question whether it were really desirable to prevent swarming. In his opinion, it was not. The new swarms would gather enough more honey to make up for the slight annoyance, and the loss of time consequent upon getting ready, and starting a new home. He gave quite a number of instances to show that the new swarm would run away ahead of the parent colony. For instance, one old colony he had on the scales, gathered 5 lbs. a day before it cast a swarm, against 12 lbs. a day for the new swarm later on. Pres. Miller, to bring the matter before the convention, asked those to rise who believed that, for best results in *comb* honey, it was desirable to prevent swarming. Thirty-one rose to their feet.

When the converse of the question was stated, 52 arose. Then Pres. Miller asked those to rise who believed that, for the best results in *extracted* honey, it was desirable to prevent swarming. Two members signified that it was desirable, against 49 who thought not.

R. C. Aikin, of Colorado, favored some system to prevent swarming in the production of comb honey. He said that, in a term of five years, he would produce more comb honey, by running on the non-swarming plan, on the principle of dequeening, than the best man we could pick out in the convention, who would allow his bees to swarm. He would control swarms every time if he could, because, during the operation of swarming, valuable time was lost; but in going on the non-swarming plan we must know how to make the bees work.

C. F. Muth stated that the reason why the new swarm did better was because the old bees were the ones that gathered the honey, and that, as a rule, they went off with the swarm. It was urged, however, by others in the convention, that the whole question as to the desirability of preventing or allowing swarms depended largely on locality—one furnishing long-continued or one with short, heavy honey-flows. The plan that had worked the best in one locality would not necessarily do for another.

Mr. Alpaugh, of Canada, was then asked to give his method of preventing swarming. He smiled somewhat doubtfully, and said that, for comb honey, he did not know that he had any-

For extracted honey he would give an abundance of room and tier up. He did not indorse the idea of Mr. Simmins, that an empty hive placed *under* the brood-nest would prevent swarming. He had tried it, and found it would not work. If he put the empty chamber anywhere, he would put it above. He was then asked to give his system for producing comb honey, in response to which he said he preferred new swarms. He hived them on an extra brood-nest having only starters—starters attached to top-bars, a plump inch wide, and the frames themselves spaced close. Over this he put a queen-excluder and then sections. When he hived on starters there was much less liability of swarming.

As discussion up to this point had been largely on the matter of preventing swarms, some one asked the question as to what was the best method to secure increase, when increase alone was the object. Pres. Miller asked those who considered artificial swarming or dividing the most rapid means for accomplishing this end, to rise. Sixty-three responded.* Then he asked those to rise who preferred the natural-swarming method. No one got up.

EVENING SESSION.

The grading of honey was the first thing under discussion. The plan adopted at the Washington convention was then read. For some reason or other the members seemed to take very little interest, and finally it was voted to take no action one way or the other. This was, no doubt, somewhat of a surprise. Either the convention had got tired of the subject, or else it seemed impracticable to do any thing with it at all. A paper was then read from Mr. Muth, on the grading of honey. He took the ground that any scheme that might be proposed by any body of bee-keepers would not be accepted by honey-buyers and commission men generally. Their own markets required special grading, and they would adhere to whatever suited their purpose best. He gave some good suggestions on putting up extracted honey for market. It was surprising, the lack of knowledge that bee-keepers seem to show in putting up their honey. A short time before, a consignment of extracted honey had been shipped to him, put up in barrels that had previously been soaked with water to make them tight. This was the worst thing that could have been done, for it was a well-known fact that honey would absorb water. When the honey-buyer or commission man came to make out his report, that so many pounds had leaked out, the shipper would complain, and begin to doubt the statement of the consignee, and the result would be trouble all around. Barrels should be thoroughly dried, and the hoops driven down before putting honey into them.

QUEENS GETTING THROUGH PERFORATED ZINC.

DR. MILLER SAYS THAT THOSE QUEENS WHICH GOT THROUGH PERFORATIONS $\frac{165}{1000}$ WIDE WERE REARED DURING SWARMING TIME.

That letter of Dr. Tinker's, on page 829, together with the lengthy footnote, makes very interesting reading. According to the testimony there given, it appears that the best size for queen-excluding zinc is somewhere not less than $\frac{165}{1000}$ of an inch, and not more than $\frac{1695}{10000}$, a range of $\frac{45}{10000}$ of an inch to settle, or about $\frac{1}{7}$ of $\frac{1}{52}$ of an inch. I would say that, if all my excluders had perforations of the same size as the sample sent, then I am of the opinion that $\frac{165}{1000}$ is not too small, for I had no evidence that the workers were hindered in passing through, unless possibly more loads of pollen were found lying loose than if no excluder had been there.

But after reading the conclusions reached—conclusions which seem to have been reached with care—and after comparing with them my own experience, I confess I am all in a muddle. Without further delay, however, I'll try to comply with your implied request, Mr. Editor, "to give a history of that queen which got through perforations only $\frac{165}{1000}$ inch wide." There were several of her—just how many I can not positively say. Dr. Tinker has given a diagnosis of the case, according to which the queens were abnormally small, raised in a time of dearth by removal of the queen from a strong colony. Couldn't have got much farther off, doctor, although your diagnosis may be pefectly justified by the data you had to work on. Instead of "a time during the season when little or no honey was coming in," the queens in question, at least those which were virgins, were raised during a flow of honey, never exceeded during my experience, if, indeed, it was *ever* equaled. Instead of the queen being removed, thus forcing the bees to rear another, in every case the queens were the result of natural swarming, pure and simple. As to their being undeveloped, and thus below the normal size, I can not speak minutely on that point, as I had no means of measuring their size, even if I had thought of such a thing; but measuring by the eye after seeing a good many queens, I should say they were fully up to the average size. One of them, at least, was an old laying queen, and one of the virgin queens was daughter of a queen sent me from Florida by Dr. J. P. Murdock, a queen remarkable for her large size.

Other queens tried, and tried repeatedly, to go through the excluders, and failed. Why that should be, or why queens of full size should go through when they ought to have stayed in, according to all measurements, are things I don't pretend to say. You, gentlemen, are the lawyers in the case, the judge and the jury, and I throw myself on the mercy of the court. I await with much interest your verdict, whether it be that there were some perforations larger than others, or that I was mistaken entirely in my observations, or that there is some other way of explaining what seems to be inexplicable. All that I know at present is, that swarms issued accompanied by these queens that went through the excluders, some of the swarms being hived and some of them escaping to parts unknown.

THAT SUGGESTED IMPROVEMENT IN FRAMES.

I'm glad to see full discussion as to what is best in a frame, and friend Scudder's letter on page 830 is quite interesting. If the extreme ends of the top bars do not touch each other, I see no reason why they may not just as well be narrowed down to ⅝ as to be left wider. That will leave a space of ¾ between; but at that point there is not much likelihood that bracecombs will be built. But I believe I would rather have the ends 1⅜ than ⅝. Then there will be no need of the tin rabbet, and it may be a question whether there is need of more fingerroom to handle the frames. Even if a space of ¾ be allowed to take hold of the frames, will it not be necessary to pry them loose before taking hold of them? and, while prying loose, may we not just as well pry them apart far enough to take hold of them readily? Is that open passage through the ends of the top-bars an advantage? Do the bees go directly up the

*As there was an attendance at most of the sessions of at least 200, it must not be understood that all voted on these questions.—ED.

end of the hive to the super without going through the brood-nest?

Friend Scudder objects to a top-bar ⅞ thick, because bees don't like to travel so far. I have had no difficulty in getting my bees to work through a greater space, making it worse by having two ⅜ air spaces to cross. If the bees go up the end of the hive, then the thickness of the top-bar will not matter. There is surely a little more danger of sagging with ⅝ than with ⅞; and, as I have already said, if there were no need of thickness to prevent sagging or brace-combs, I should still want the greater thickness as security against darkening the sections by too great nearness to the brood-nest.

DRONE CELLS FOR QUEEN-CUPS.

Friend Cormal, who gives the ingenious way of handling royal jelly on page 811, will hardly object to drone-cells in which to start young queens, when he remembers that just as large queens are started in worker-cells as in queen-cells. In neither case are the bees limited to the usual size of a worker or a drone cell, such cell not being really occupied by the young queen at the last, but only a prolongation of the cell. At least, I suppose the drone-cell would be used much as the worker-cell.

Doesn't friend Cormal make the diameters of cells too small? Ought not the worker to be $\frac{6}{30}$ instead of $\frac{6}{32}$, and the drone $\frac{7}{28}$ instead of $\frac{7}{32}$?

Marengo, Ill., C. C. Miller.

[Well, now, doctor, we were in hopes you would say that those queens were reared under abnormal conditions, and would admit that they were abnormally small; but when you say they were reared under the swarming impulse, we are forced to the conclusion that a few good queens, even when reared under the swarming impulse, may be smaller than the average of their sisters. We have carefully measured with a micrometer every row of perforations in our zinc: the largest perforations are not as large as those of Dr. Tinker's lot; and the smallest perforations are about $\frac{163}{1000}$. But with only two exceptions do the holes vary in size from the 165 mark. In one, we believe the hole measured 169 and the other 164. The holes that your queen got through were $\frac{165}{1000}$; hence we must conclude that zinc can't be made to exclude all queens, but it does the great majority, there is no doubt.

We do not think so much of that Scudder top-bar as we did. The foreman of our wood-working building says it is a very expensive thing to make, because the last cuts—those which narrow up the ends of the top-bars to give the finger room, would have to be done one at a time, and, worse than all, each top-bar would have to be handled separately. This would make them so expensive that very few bee-keepers would want to buy them. We can narrow up the ends of the top-bars providing we do not have to have a different thickness—that is, any thing thicker than ⅜ inch. Hello! here is an article from Dr. Tinker, on the zinc question:]

THE PERFORATED-ZINC QUESTION, AGAIN.

THE SLIGHT DIFFERENCE IN SIZE OF DIFFERENT VARIETIES OF BEES; THE EXACT RIGHT SIZE.

Friend Root:—I was greatly interested in your note to my article on page 830. I note the slight difference in our conclusions about the "exact right size" the perforations in queen-excluder zinc should be, and can account for the same only on the suggestion you have given; viz., that my Syrio-albinos may be a little larger than the average Italian. There is certainly a small difference in the size of bees, not only in the same colony, but between different strains. I have had but one colony of Carniolans, and I am sure they were no larger than the bees of my strain. As my Syrio-albinos have been frequently crossed with drones from choice unrelated Italian queens, this will account for their large size and great working qualities. The most of my queens are directly descended from a pure Syrian mother, and I believe the stock to be invaluable. From the frequent crossing with Italian drones, the strain is practically Italian, although the bees still show their Syrian origin after some nine years of breeding. Thanks for your reference to them.

From all that has been said it appears that queen-excluder zinc may vary in size all the way from $\frac{165}{1000}$ to $\frac{170}{1000}$, and give good results. It only remains for bee-keepers to know that no really good and valuable queen can get through such zinc. Dr. G. L. Tinker.

New Philadelphia, O., Nov. 14.

LADIES' CONVERSAZIONE.

SWARMING VERSUS NON-SWARMING.

A STRONG ARGUMENT IN FAVOR OF LETTING BEES SWARM.

Ed. Gleanings:—As I have seen no reports from this part of the world, I will send mine to swell the list of "Reports Encouraging." Last fall I had 49 colonies of Italians in eight-frame Dovetailed hives. We left them on their summer stands on Heddon hive-stands. We put a piece of heavy ducking cut to fit the hive over the frames, and then set on the empty super, and put in a chaff cushion big enough to fill it. The cover was then put on, and nothing more was done until about the middle of March, when we looked them over, and found that there had been no winter loss, and we had no weak colonies. We found two queenless ones, however, and doubled them up on others. The cloth was plastered down tight, and the hives were dry and lots of brood started. Some were short of feed, so we fed out about 300 lbs. of honey that we had stored away in brood-combs for that purpose. We put out four combs a day until we used them all, and then fed 150 lbs. of sugar.

Our first surplus honey came in on the 15th of June, and almost at once the bees made preparation for swarming. I set apart 25 colonies for comb honey, and ran the other 22 for extracted honey. I wanted honey more than bees, and determined to keep the comb-honey bees at work and not let them swarm. Every Monday I went through those 25 colonies and cut out all the queen-cells. I continued this treatment for four weeks. In the meantime the bees loafed and did but little except gnaw the foundation out of their sections. Finally I concluded that they could do no worse if I let them swarm, so I let them go and hived the swarms in eight frame hives on four frames with two-inch starters of foundation, and added four frames of honey from their old hive. I put on supers at once, and they began to carry the honey up and store it in sections. Before the season ended they had made me over 50 lbs. of beautiful honey to the hive. Henceforth my bees shall swarm as soon as I can get them to do so, unless Gleanings can tell me how to make them go to work.

My 22 colonies made 4640 lbs. of honey, as

nice as I ever extracted. I increased some by artificial swarming; but the extracted honey all came from the spring count of 22 colonies.

I have now to show, from my 47 colonies, spring count, 1300 lbs. of comb honey; 4640 lbs. of extracted honey and several pounds of wax, and 87 colonies of bees. I began four years ago with three colonies and Root's A B C, having never seen the inside of a hive before. Last year I had to treat for foul brood, which put me back; but by a close study of A B C and GLEANINGS, and a good deal of hard work, I am ready to handle my bees for profit.

What has become of the "Ladies' Conversazione"? I am afraid the bee-keeping sisters are backward about giving reports. I hope we shall hear more from them.

Mancos, Col., Oct. 21. MRS. A. J. BARBER.

[Your experience is directly in line with what was said at the "Big Convention" at Chicago. The great majority agreed that much more honey would be secured by letting bees swarm; that it was bad policy, from a honey point of view, to try to prevent nature's way of increase. Non-swarming would be very nice; but so far it means, in most cases, little or no honey.]

A HOOSIER LADY MAKES INQUIRY FOR RAMBLER.

I had the pleasure of being at the grand bee-keepers' convention at Chicago a part of the time, and learned a few of the leading bee-keepers whom we have been reading about, and heard our brother from Australia, which was all very interesting indeed. But my curiosity was not quite satisfied, for I saw no one with an umbrella strapped across his back, who claimed to be the Rambler. Then I came to the conclusion he must look so much like other people I did not recognize him. So I have kept watching and watching through the paper to hear some one say they met Mr. J. H. M. at the convention, but have failed so far; so I should like to know what he was about, to let such a convention pass by without his being there. Surely Mr. Wilder has led him astray, or something terrible has happened to him.

A HOOSIER.

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

PICKING UP ROYAL JELLY WITH A PIPETTE, OR DROPPER, NOT A NEW IDEA.

On page 811, in your footnote to Mr. Jas. Cormal, you say: "Our friend Mr. Cormal has struck a very ingenious way of extracting royal jelly from the cell-cups. We never before thought of the dropper (or, as it is sometimes called, pipette) for this purpose." In 1888 or '89 I wrote you an article for GLEANINGS in which I informed you of the success I had in the use of the dropper, such as is used for dropping medicines, in transferring queen-larvæ from queen-cells which I did not want, and substituting young larvæ just hatched. I also wrote to Dr. Tinker at the same time about my success with the dropper, as he and I were then experimenting. You thought so little of the article you did not publish it, but wrote me you did not understand what I meant, and, not having time to write again then, it passed off. Since then I have continued to use droppers of different sizes for removing larvæ I don't care for, and substituting such as I do want, in queen-cells, and also for transferring royal jelly. If you are careful in transferring, with a suitable size of dropper, the royal jelly and larvæ just hatched to drone-cells, as with Mr. Fooshe, you will seldom fail in getting bees to accept them, and they produce large fine queens too. ABBOTT L. SWINSON.

Goldsboro, N. C., Nov. 10.

[You are probably right, but we do not remember of your having written regarding the pipette; but it seems we must have published the article, from what follows below from Mr. H. L. Jeffrey:

On page 811 you say, "We never before thought of the dropper." At least four years ago, may be five, I tried the dropper. The idea I got out of GLEANINGS, and I found it good for thin jelly, also tiptop to mix warm water with the thick jelly to make it usable in cell-cups. I have seen Mrs. M. E. Tanner, North Woodbury, Ct., suck the jelly up with a pipette, as far back as 1890. She got it out of GLEANINGS. H. L. JEFFREY.

Woodbury Ct., Nov. 5.

This illustrates that, whatever wisdom or knowledge the editor may lack, the subscribers of GLEANINGS are fully capaple of making up the deficit. We are always glad to be corrected. Both of the letters above testify to the value of the dropper, and there can be no doubt but that it is a good thing; and the queen-breeder who fails to give it at least a trial *may* be missing something of value.]

SHALL WE LET THE MOISTURE FROM A COLONY, PACKED IN SAWDUST, ESCAPE THROUGH A VENTILATOR?

I am but a beginner in the bee-keeping business, consequently I know but little about it. But the experience I have had has taught me that, in putting up bees for the winter, two things should be had in mind: first, keep the bees moderately warm; secondly, allow foul air and dampness to escape from the hive. Now, the question is, How shall we combine these two principles? My plan is as follows: I use the Hill device, burlap, 1¼ yards of cheese-cloth, and sawdust, the latter coming up to within an inch of the top of the super. I then place in one of the back corners of the super a ventilator, which is a block of wood 4¼ inches long, with a ⅝ hole through the center; wire cloth is tacked on one end, and four wire nails are driven in so they stand out ¼ of an inch, to stand on the tin that holds the section-holder.

Newton, Nov. 6. C. H. SHERWOOD.

[We are afraid your ventilator will sooner or later lead you into trouble. We have tried what amounted to practically the same thing, and have lost colonies. The difficulty seems to be that an *open* ventilator lets the heat escape too rapidly. Better use chaff cushions, and then if, toward spring, they become damp, open up the hives on the first warm sunny day, and let the cushions dry out. The moisture will *usually* escape slowly through the cushions, but not fast enough to allow *heat* to escape—the very thing we must economize as much as possible.]

THE RAISING OF SWEET-CLOVER SEED; A FEW HINTS FROM H. R. BOARDMAN.

There is no reason why the raising of sweet-clover seed will not succeed if treated the same as other clovers and grasses should be treated to insure successful seeding. But don't be deluded into the general notion that a few seeds scattered carelessly over the field will be all that is needed to stock it, to the exclusion of every thing else, for you will be disappointed in getting a seeding unless you take as much pains with it as with any other clover; and I advise a liberal seeding, not less than 8 or 10 quarts per

acre. When once it gets possession it is a persistent stayer unless you feed or cultivate it out; but if let alone it will stay for years. Cutting it only seems to encourage its growth.

I have a good seeding now, sown during the late freezes in March, with winter rye. I think that as good as any way of seeding. It has made a good record with me this summer as a forage crop for pasture. But my stock have eaten it so closely that it will not reseed, and I shall probably lose the seeding for the future. I shall be pleased to answer any questions in regard to sweet clover, through Gleanings.

H. R. Boardman.

East Townsend, O., Oct. 25.

BINDING ON THE SIDES INSTEAD OF ON THE ENDS OF ENAMELED CLOTHS.

It would be a great improvement to the enameled quilts if the metal bindings were put at the sides instead of the ends, so that the quilt could be rolled up over a portion of the frames in taking one out. As it is now made, the entire quilt has to be removed in order to take one frame out, exposing the tops of all the frames to robbers, when perhaps only one frame is required to be taken out.

W. B. McFarlane.

Colyton, N. S. W., Australia, Sept. 14.

[The objection to having the binding at the sides was because there was trouble in lifting frames out of position. This was especially true of the old metal-cornered frames on the metal rabbets. With the new Hoffman or fixed frames there would be no trouble; but why have any enameled cloths at all? We do not use them on our new hives. The new top-bars and the small bee-spaces render any cloth or quilt unnecessary.]

PROF. COOK SOON TO BE A RESIDENT OF CALIFORNIA.

There is no longer any doubt in regard to Prof. Cook's coming to California. In a letter of recent date he states, "I shall be with you, body and heart, about Jan. 1." It is not necessary to tell Californians who Prof. Cook is, and the grand work he has accomplished in the field of science. Horticulturist and agriculturist, as well as apiculturist, will rejoice at his return to the Pacific coast, and all will join in giving him a right royal welcome.

Geo. W. Brodbeck.

Los Angeles, Cal., Oct. 21.

[We have known for some time that we of the East were about to lose one of our best and most valuable men in the personage of Prof. Cook. For various reasons the change has seemed necessary. He has been an exceedingly busy man, and overwork, we fear, has told too heavily upon his health, rendering a change of climate and a change of work necessary. What will be Michigan's loss will be California's gain.]

HOFFMAN FRAMES, NEW AND OLD STYLE. PROOF AGAINST BURR-COMBS; SELF SPACING SATISFACTORY, BUT BOTTOM-BARS TOO NARROW.

Friend Root:—I see you are wanting reports on self-spacing frames, so a faultless self-spacing frame will be found out; and I do hope you will succeed, and send out such a one in 1894. I will give you my experience on the Hoffman frames, as I have about 900 in use. I have about 200 of the old style, and the remainder are of the new style. The old style have given good satisfaction so far as brace and burr combs are concerned; but the end of the frames and the wood rabbets become so propolized in time that they are hard to manipulate; however, with the tin rabbets it is not so bad. Now, with the new style Hoffmans they have also given good satisfaction in regard to brace-combs. Where they were used exclusively there were scarcely any braces visible; and what few there were, were so small that they were very little trouble.

Now I'm done with the top-bars. Next for the side-pieces. They are all right to suit me, with the exception of the parts running up on to the top of the top-bar. They are rather light, and are liable to split off.

Now as to the bottom-bar. To this I have the greatest objection concerning the new-style Hoffman frame. They are all right to use in the bottom part of the hive, or where queen-excluders are used; but here is the trouble: Excluders are too expensive for one to be used between each body, and, furthermore, there is no more use for a second or third excluder on one hive than there is use for a fifth wheel on a wagon; and if they are not used, the bees will build down against the bottoms. Hold on! that's just what we want them to do; but they will not hold on, and neither will they stop their work until they have it built down on the sides of the bottom-bars, and against the top-bar of the frame underneath.

Deer Plain, Ill., Oct. 26. F. X. Arnold.

[This is in line with the other reports to the effect that the new-style Hoffman top-bars are an improvement over the old style with widened ends on wood rabbets. If our friend Dr. Miller, who seems to have a liking for the old style, will try the two kinds, we think he will come to the same conclusion as Mr. Arnold. Regarding the bottom-bars, that is a point upon which we should like to hear from others of our subscribers. So many have expressed themselves as satisfied with the ⅜-square bar, that, before making a change, we should like the counsel of others.]

BROOD-FRAMES—WHAT IS THE BEST STYLE FOR PREVENTING BURR-COMBS?

Mr. Root:—I should be glad to have you answer the following questions:

1. In using the eight-frame Dovetailed super for extracting—the same to be used for brood-chambers, interchangeably—what width and thickness of top-bar, and what width and thickness of bottom-bar, do you think would be best to prevent burr-combs between the two parts of the brood-chamber, or between two extracting supers—all of the frames to be self-spacing? (I have used and been in love with that principle too many years to drop it now, even in extracting-supers.) Have you tried bottom-bars for extracting-supers ⅜ in. wide and ¼ in. thick?

2. Supposing the width of the top-bar to be 1 1/16 in., of what thickness must it be to be proof against sagging (in shallow frames)?

3. I can't see any advantage in having frames so that you can "*throw* them on the floor" without breaking. With shallow frames and *heavy* foundation, wouldn't one have combs practically just as good as though they were wired?

4. With the bee-space on top ¼ in., don't you sometimes have trouble with the bottoms of section-holders sagging, and so destroying the bee-space where no honey-board is used?

5. Is basswood the stiffest kind of wood that it would be practical to use for the bottoms of section-holders? Which should be the heart side—the bottom, the top, or the side of the bottom-bar? John S. Callbreath.

Rock Rift, N. Y., Aug. 30.

[1. The frame that we consider best for pre-

venting burr-combs is the self-spacing Hoffman. Top-bars are $1\frac{1}{16}$ in. wide and $\frac{7}{8}$ thick; bottom bars $\frac{3}{8}$ in. square.

2. Half an inch, probably; but that thickness, according to some reports, does not exclude burr and brace combs as well.

3. There is no need of making frames so that they can be thrown around. The thickness and width of top-bars is for other reasons.

4. One-fourth seems generally to hold up.

5. Basswood is the stiffest and the cheapest.]

AN OPEN LETTER TO DR. MILLER.

My Dear Doctor:—I see in your "Stray Straws" a "straw" that points this way. We are very glad to be remembered; but in the name of 85,000 inhabitants I want to protest against some of your spelling. You write St. Jo. Now, in the eyes of the thrifty people of this "Electric City," you have committed an almost unpardonable offense. To write St. Joe is bad enough; but to call this grand old St. Joseph "Jo" is a little too much. Just think of it, to call a thrifty city like this one "Jo"—a city whose jobbing trade reached 125 millions in 1892; a city with 329 factories; a city that makes more overalls than any other city in the U. S.; a city with 10 banks, representing millions of capital, none of which closed a door or caused the loss of a penny to a depositor during the late panic; a city with a clearing-house report of over 100 millions last year; a city with 30 miles of electric street-railway in operation; a city with 50 churches and fine public schools—is it not a little too much to dub such a city "Jo"? Then, when you come to think of it, who would write, "Jo and Mary went up to Jerusalem"? Now, doctor, if you will not call us names any more, and will come out here next fall, we will try to "heap coals of fire" on your head by seeing how well we can treat you. We are sure you will never think of calling this city "Jo" again after you learn of its thrift, and become acquainted with some of the large-hearted people who make their homes in this fertile valley. Fraternally yours,

EMERSON T. ABBOTT.

St. Joseph, Mo., Nov. 15.

[Although friend Abbott treats this matter in a rather Jo-king style, we feel that his point of order is well taken, and that we ourselves are partly too blame. People are so familiar with "The Hannibal & St. Jo Railroad," etc., that the nickname is rather more familiar than the full name. But we'll not nickname you any more, Bro. Abbott—

"No, no, no—not for Jo,"

as the poet says.]

DOOLITTLE, DOOMUCH.

Doolittle is his name,
And widespread is his fame;
For as to bees, not one
Can beat what he has done.

So let us change the name
To which by birth he came;
Let's call—why, don't it fit?—
Doomuch him by merit!

C. N.

RELIGIOUS TRIUMPHS IN SUDDEN DEATH.

C. C. VAN DEUSEN, AND HIS SUDDEN DEATH.

The following further particulars in regard to the sad death of our friend and his wife are taken from the *Michigan Christian Advocate:*

If any one should ask, "Does the religion of Jesus meet every need of man?" I want to answer, yes, and stands every test of human experience. Never was I more impressed with this blessed truth than when I stood by the side of Mr. C. C. Van Deusen, of Sprout Brook, N. Y., who was so terribly injured in the dire disaster on the Grand Trunk in this city on the morning of the 20th. I was at the scene very shortly after the collision. It was dark and raining; the light from the burning wreck, the moans from the wounded and the mangled ones here and there in buildings and in cars making a scene we can never forget. I entered a caboose; and as there were a great many wounded in it some one accosted me, asking me, asking, "Are you a surgeon?" to which I replied, "I am a Methodist minister." Instantly one wounded unto death said, "I want to see you; come here." At once I was by his side. He said: "My name is C. C. Van Deusen, of Sprout Brook, N. Y. I'm a Christian, and I'm nearing home. My wife has gone, and I'll soon be with her." (His wife thirty minutes before had gone up in a chariot of fire.) "She was a good woman, and a teacher of the infant-class in the Sabbath-school." As I inquired of him as to his personal salvation he replied: "I am in the hands of my Savior, and I'll soon be with him." A physician entering the car, I called him at once to this brother's side. After examination he calmly looked the doctor in the face and said: "How soon shall I be with Jesus?" He very deliberately talked of his affairs, the disposition to be made of his property, saying, "I should like to live for my children, but I must go. In my Father's house are many mansions." When he was told the remains of the precious Christian wife and mother were in the hands of the undertaker, he said, "Send us back together." Knowing he was among strangers, he said, "Dominie, don't leave me," and I promised he should not be left alone. We conveyed him to the Nichols Memorial home, a hospital of which Battle Creek may well feel proud, and arranged him as comfortably as possible under the circumstances. Soon the chill and darkness of death approached. Said he, "Dominie, is the sun shining?" "No, my brother, it is cloudy and raining." "I thought it was growing dark, and I don't breathe as easily as I did." It was death. A little longer, and husband and wife were re-united, while back in the home in New York there were two children bereaved of father and mother at once. I never saw such calmness and peaceful triumph in the presence of death in all my ministry of nearly twenty years.—REV. G. B. KULP.

OURSELVES AND OUR NEIGHBORS.

Are ye able to drink of the cup that I shall drink of, and to be baptized with the baptism that I am baptized with? They say unto him, We are able. —MATT. 20:22.

In the *American Bee Journal* for Nov. 16, our good friend York, the editor, has seen fit to print a communication from one of our unbelieving friends. This communication was called forth because friend York mentioned editorially the way in which Mrs. C. C. Van Deusen met death with such Christian fortitude. Our good friend York evidently considered it not best to undertake to argue against this fling at the Christian religion; and, as a rule, I think it is not well. There is, however, one point in it to which I wish to call attention. Let me quote just four lines. The writer says:

"Did this poor woman's pitiful prayer drive God frantic as it did the crowd? Does this not prove that man is less cruel than God, or that God is a myth, and prayer futile?"

Perhaps I should not think so much of this were it not true that, years ago, I myself—yes, A. I. Root—used these same or similar arguments; and I took a certain kind of satisfaction in shocking Christians, and in laughing at those whose faith was weak, as I repeated something that I had heard or read, or quoted from prominent skeptical writers. This was toward twenty years ago, however. One reason for my sad blunder at that time of my life was because of a misapprehension. Perhaps Christian teachers were somewhat to blame for that misappre-

hension; but a great part, if not the greater part of the blame, lay on myself. I knew I was inconsistent. I knew in my heart that I demanded more of other people than I was willing to conform to myself. Twenty years ago we used to hear things preached from the pulpit that we do not hear now—at least, *I* do not hear them now. I think that some ministers of the gospel in those times needlessly and foolishly exposed themselves to charges of inconsistency, that unbelievers who possessed a pretty good share of common sense were not slow to take up. The mature Christians among our readers perhaps see, without telling, the fallacy in the above quotation; but I firmly believe there are many—yes, Christians—whose faith is weak, who may even yet be misled by such sophistry; and I am pretty sure, too, there are many boys and girls who do not stop to consider, or who have not been taught to consider, the great blunder our poor friend is making. Let us look into it a little.

Probably all of you have read the account, at least somewhere in print, of the wonderfully heroic way in which this good woman faced and met her death. The writer takes the ground that her prayers were unanswered; and he also takes it for granted that she prayed only that she might be delivered from the terrible scorching flames If you will read the account again on page 829, Nov. 1, you will see that nothing of the kind is said. Very likely, at the *outset* she prayed for deliverance from that awful trial, just as our Savior prayed in the garden, before his coming crucifixion; but his prayer ended, as you remember, with the words, "*Thy* will, not *mine*, be done." We know this woman was a Christian, and we have very good reason to believe that her prayer was of a similar nature. The Christian whose burden of prayer is, that God will spare his life, or give him long life, is no Christian at all; and the person who expects that, because he belongs to a church, he is to have a charmed life, and be spared from the accidents and emergencies that fall to the general lot of mankind, is worse than no Christian at all. He is a bundle of selfish bigotry. The whole Bible is full of warnings that he who takes up the cross must bear grievous trials. You remember Dr. Watts' little hymn—

Am I a soldier of the cross?

There is no Christianity at all without bearing crosses and trials—yes, terrible trials; and if a Christian is not a *soldier*, and a brave one at that, he is not a Christian. When the people were frantic because they began to see they were powerless to save her, she, like one of the martyrs of old, exhorted and encouraged them. She said to them, "I am a Christian." Suppose she had blamed them at this terrible moment, and thrown reproach back into their faces, that they were letting a woman die in that horrible manner. I beg pardon for suggesting such a thing; but I do it to show you what a glorious thing it is to have a Christian's hope, that goes not only through life, but carries us through death, and such a terrible death as that. We have every reason to believe she used common sense as well as faith in that supreme last moment. *She* recognized the fact that those brave men would have given their lives to save her, if it had been of any avail; but it would have done no good; it would only have made other victims for the devouring flames. As her lips were seen to move in prayer, there can hardly be a question but that it was for grace and strength to *go through* the terrible ordeal. Our Savior prayed in a similar way; and when his physical torture was at its greatest height, he gave voice to that plaintive wail, "My God! my God! why hast *thou* forsaken me?" We read in the account, "Even the fury of the flames that wreathed her limbs and blistered and curled the white flesh of her arms was powerless to provoke a scream." Who shall say her prayer was unanswered? Why, it seems to me that it must be evident to every spectator that *grace from on high* was given her in a most wonderful manner to bear the trial and a degree of suffering that perhaps falls to the lot of not more than one in ten thousand or more of human beings. "A wild groan burst simultaneously from the lips of the spectators, and strong men wept;" but not a word was wrung from that brave woman. The closing messages to her husband and family were given quietly and with composure. Did her faith waver? Surely not. Who knows what precious passages came to her mind in those last moments? "Though he slay me, yet will I trust him." The account of this heroic way of meeting death speaks volumes to the world for the Christian religion. My good friend, how much would it be worth to *you* to be able to die in that way? Now, pardon me for just suggesting the effect on the world, or the effect on humanity, had she, in her last moments, taken up with the doctrine expressed by that unbeliever. He says, "Did God heed her cry?" And then he adds, "No, no! Has he ever heeded the cries of his children in their hour of need?" And, again, he takes the responsibility upon himself of saying, "No. The long record of horrible deaths which he has inflicted upon his 'children' by fire and flood and storm, by starvation and plague, answer, 'No, a thousand times no!'" Now, suppose this woman's faith had deserted her in her last moments; suppose that, under the agony of such a trial, she had been tempted to complain of God, and had said to that crowd that the Christian religion proved of no avail, and that, as our friend expressed it, prayer is futile. Would such a confession have been comforting to the men? Would it have made those strong men feel better? Would its tendency have been to decrease crime and selfishness and greed throughout our land? Why, the very worst one among you, I am sure, will say, to use the language of our friend, "No, a thousand times no." I think I can, without question, say the verdict of the crowd would have been, "We are glad she died a Christian. If Christianity helps one to pass bravely through an ordeal like that, let us have it, and let the world have it." Another thing, I hardly believe one individual in that crowd thought of blaming *God* for that accident, or even thought of saying that God inflicted these things upon us. We have read of martyrs dying at the stake for the cause of Christ. I feel sure this woman was a model Christian martyr up to the present day. She has been showing us how to live—especially that little Sunday-school class away off in her York State home; and when the time came she was able to show strong men how to die; and, if I am not mistaken, the great railroad companies are moved now as they have never been before, to consider this matter of banishing fire entirely—at least from passenger cars. The mechanical progress that has been made, and which was evidenced at the recent World's Fair, indicates that we as a people are equal to the task of having our cars warmed without fire. If by steam, some arrangements must be made like the automatic brakes, so that the steam is instantly shut off as soon as an accident occurs or is imminent. And electricity should come to the front and take the place of oil-lamps for lighting the cars. Mrs. Van Deusen has not died in vain. She died as did her Master, that we might live in both a physical and spiritual sense.

But let us take up again this foolish and preposterous idea that Christians are to be spared from physical pains and death. In one sense it is true that Christianity tends to relieve suffering — that is, common-sense Christianity. There is a whole string of the most terrible diseases that afflict humanity, caused directly by sin, and by breaking one particular commandment. If we read our Bibles, and practice its teachings, we as a people ought to be spared all of these terrible consequences. Again, Christian civilization tells us how to avoid being sick. When friend Terry came on to what was then a rundown farm, the doctor was called so constantly in that locality, and so many people had died right on that very farm, that the doctor was ashamed to be seen going in that direction. After Terry got his underdraining managed to his notion, and had taken care of his drinking-water, slops, stables, and all out-buildings, the locality became noted for the health of its occupants. Not one of his family has been sick for years past. Thus far we are all right; but to presume that a Christian, because he is a Christian, is to have an easy time all through life, to have the "softest jobs," to use a common expression, with the biggest pay, and to get clear of thunder and lightning, flood and storm, accidents on sea or land, etc., would be almost preposterous. It may be that there are many Christians who make the burden of their prayers that they may have such an easy life; but if there are such, it is time they got over it. A young man in our neighborhood once gave as a proof that God did not answer prayer, that, when their house took fire, all lost their lives except himself, while the others were professing Christians, and he alone was an unbeliever. He said, in fact, that they prayed every night that God would spare their lives and keep them from such disaster; whereas, although he did not pray at all, he was saved, and their prayers did not avail.

Ye ask, and receive not, because ye ask amiss, that ye may consume it upon your lusts.—JAMES 4:3.

It may be well for small children to ask God to keep them from harm while they sleep; but I do not believe it is well to pray very much that God may spare us especially from the disasters common to mankind; neither do I think it the thing for people to be continually thanking God because they did not happen to be in a railway accident or earthquake. It suggests to me a rather undignified couplet I heard years ago, and yet this couplet carries a moral with it.

O Lord, bless me and my wife; my son John and his wife;
Us four and no more.

Please let us be careful about getting into that fashion in our prayers.

This sort of misconception has been by no means confined to the present age or generation. Notwithstanding the Master's teachings—notwithstanding the hardships and privations he endured, his little band of followers would again and again get the idea that he was, sooner or later, to enter the arena of politics, and become an earthly king. In fact, the multitudes wanted to crown him king again and again; and even after he had been telling them that he must submit to persecution and death, two of them right away afterward begged the privilege of sitting, one on his right hand and the other on his left, when he should come into his kingdom. And their mother, too, joined in this request—or, rather, first made it. I have taken my text, as you notice, from this very incident. He, knowing the future, and knowing their awful misconception of what his kingdom was to be, replied, in these sad words: "Are ye able to drink of the cup that I shall drink of, and to be baptized with the baptism wherewith I shall be baptized?" It seems almost pitiful to think that their request was in part granted when they had not even a faint comprehension of what it implied. But the poor fellows gained knowledge and wisdom before they died; and when the time came for them to die a martyr's death they realized what his words of long ago implied, and, like the Master, they were ready to give their lives, and undergo that *terrible* baptism.

Our devoted Christian friend on that fated railway train, with the spirit of the martyrs of old, faced the cruel death. When I read the account of it in the newspapers it occurred to me at once that she, like the martyrs of old, received her baptism, but it was indeed a baptism by fire. The Pharisees of olden time were, I know, fond of having the best places, and the highest seats in the synagogue.

The Pharisees love the uppermost rooms at feasts, and the chief seats in the synagogues.—MATT. 23:6.

But what did Jesus say of such a religion? Again, we have a glimpse of that same spirit in another Pharisee when he thanked God he was not as other men are, and especially singled out the poor publican. Did he have any ambition or any conception of the work of raising that poor publican to his own level? Why, not the slightest. He did not want the publican to be any different, because it would rob *him* of the privilege of thanking God for the difference in their respective stations. He would not have made a very good missionary, would he, friends? Some may urge that the prospect for the Christian is not a very inviting one. Well, it certainly is not; and no one should expect it to be inviting to the selfish or proud individual. There is, however, an encouraging side that I have hardly as yet touched upon. Amid all these trials, hardships, and persecutions, we have the promise of something better than all this world can furnish. The Master says, "Lo, I am with you alway, even unto the end of the world." And he says, also, "He that loseth his life, for my sake, shall find it." And Christians away down through the ages have attested the wonderful truth of this promise. He also said, "My yoke is easy, and my burden is light." The great truth embodied here is that, when we once manfully shoulder the burden or the yoke—for it sometimes is a yoke—then we have grace and strength to bear it. Thousands of Christians have testified, during their last moments, that

Jesus can make a dying-bed
Feel soft as downy pillows are.

We must look out, however, right here, that we do not get the idea that our tasks and trials and burdens are *always* made easy. Many Christians have to endure suffering. I have sometimes thought that intense suffering is, very many times, the only thing that chastens and subdues a proud and haughty spirit. Oftentimes, when we think we have thrown our lives away for conscience' sake, or for Christ's sake, we find we have only entered on to a new life and have begun to live. How many, many have had this experience! "He that loseth his life shall find it." Oh, how true that is!

And now, as a final word of encouragement, I want to say that martyrs have, many of them, testified that their last sufferings, even when they perished by the flames, were not so hard to bear, after all. Like the Hebrew children in the fiery furnace, the angel of the Lord seems to come in at just the last moment, and give strength and grace to bear the tortures of the flesh. Who has not had experience in looking forward to some terrible hardship until the

anticipation was far worse than the realization? When we set about doing right for Christ's sake, even though it brought us away down into the valley of humiliation, we have found some pleasant and comforting things in the valley, after all. A year or two ago I wondered how people could bear it to be kept long weeks on beds of sickness; and yet, after chafing over it for a few days, after I had accepted the situation, and bowed my head in obedience to the hand that laid me low, five weeks on a sick-bed gave me a new experience of peace and tranquillity. In another column I have told you how I undertook a very disagreeable and difficult journey through the night, and I did it that I might remember the Sabbath day, to keep it holy. Very soon after undertaking the task a wonderful experience of peace and real enjoyment came to me, and stood by me the whole journey through.

Are there no foes for me to face?
Must I not stem the flood?
Is this vile world a friend to grace,
To help me on to God?

Since I must fight if I would reign,
Increase my courage, Lord;
I'll bear the toil, endure the pain,
Supported by thy word.

NOTES OF TRAVEL.

On Saturday, Nov. 11, I started on another trip for Summit Co. You may remember that, on page 534, I spoke of a commodious barn belonging to my cousin, D. E. Fenn, of Tallmadge, O. It was built even before Terry made his covered barnyard and large new barn. He is the one who decided he did not want his straw, his cattle, nor any thing else, out during winter. Well, a brief notice in the papers said this barn was burned. It was scarcely a week previous that I had looked over the barn, and had noticed how he had got every thing prudently put away, even to his Sunday buggy, which was neatly covered with canvas. By the way, I shall have to give you a hint of how he managed this. The canvas covering was supported by means of a frame just over the buggy, without touching it, the front side being loose so that the buggy could be backed right into its case, letting the curtain drop down again in front. In fact, one could put it in its shell again, and take it out so quickly, that it seemed almost like sleight of hand.

Well, a little before noon I came into the little village of Tallmadge. As I turned first this way and then that, hurrying to get around the hill so I could get a glimpse of the premises, hoping after all it was a newspaper blunder, and that the great barn would be seen just as it was the week before—if it were not for my Home talk on another page I might almost have wished it was the barn of somebody *else* that was burned rather than one belonging to my relative. It was but too true. The sight that met my eye was the smoking ruins and only a few pieces of old iron and a pile of ashes. The barn burned just about 12 o'clock, in the middle of the day. No one can tell just how it got on fire; but the most probable cause points a good moral to us all, and so I want to tell you about it.

Some weeks ago, two or three tramps or gipsies camped under a bridge in the neighborhood. The weather has been so dry that, under bridges of late, one often finds very comfortable quarters. Well, one morning cousin Fenn noticed bits of hay dragged along as though somebody had scattered them in carrying hay out of his barn; but as well-to-do farmers do not usually make a fuss about an armful of hay, he let the matter pass. A day or two later, in walking across his barn floor he stepped on a match. Being in a hurry he thought he would go ahead and investigate in regard to the matches at some other time; but as he looked over his shoulder, lo and behold! the chaff and straw were burning already; and he said that, by the time he got there to stamp it out, there was a place burned nearly as large as his hat. As neither he nor his hired man, nor anybody else ever carries matches about the barn, they concluded they must have been dropped by these stragglers that came after the hay. A search among the straw revealed one more match. Well, even if matches were dropped on the barn floor, it is hard to tell what should have ignited one of them when both men and teams were off at work in the fields. We might suggest rats and mice; but neither Fenn, Terry, nor other people along that line, *have* rats and mice. Of course, the barn was not locked. Like most of us, Mr. Fenn has found it too much bother to fuss with padlocks and keys. His good wife, however, assured me that, after the *new* barn is built, it is going to be kept locked up nights any way. That new buggy and a scoop-shovel were all that was saved. Mrs. Fenn ran out and got hold of the buggy, and started to pull it out; but it was too much for her strength. Two neighbors undertook it; but not understanding the kink of the cloth cover, and the way in which the thills were held up out of the way, they also failed. Just at this time, however, the owner had got in from the field by running his horses at the top of their speed. He pulled the buggy out and saved it; but the iron work on the thills was so hot that the palms of both of his hands were blistered.

There have been a great many barns burned during the past dry season; and a good deal of the work, if I am correct, has come about, directly or indirectly from tramps. Just here I want to tell you of another little incident that does not belong to *wheel* experience, but it comes to my mind. Neighbor H. had some men thrashing clover for him. The machine got "out of kilter," and the men were poking their heads inside of the separator, prying out the trouble, and remedying it as best they could. While they were at dinner the clover-stack burned up, and several bags of high-priced seed, including the expensive machinery. The owners decided that some juveniles who were out in the woods after hickorynuts must have been the cause of the mischief, for the engine was located on the windward side, and such a distance away that sparks of fire from that was out of the question. Where is the point to this story? you may inquire. Well, my friend, I will tell you. These thrashing-men *all smoked pipes;* and when the machine broke down they needed their pipes if ever a man did—at least, so they thought; and while they investigated, with the dry clover chaff and dust all about them, each one *smoked his pipe.* When Neighbor H. told them it was not juveniles at all, who probably had not been within several rods of the stack, but their nasty old pipes and tobacco that did the mischief, they were offended.

Nov. 8 I received a brief note reading as follows:

Friend Root:—Can't you come over and see my two and a quarter miles of drainage while it is in progress? Write me what day, and I will be at home sure. W. I. Chamberlain.

Hudson, O., Nov. 4.

So you see a part of my wheeling trip to-day

was planned so as to see the author of "Tile Drainage" lay the tiles himself. I wonder whether the men who make gravel roads know what a boon they are to wheel-riders. Whenever I strike that gravel road that leads into Hudson I always feel thankful. May be feeling thankful does not pay the bill for graveling the roads, but I guess it helps. Talking about gravel, I found Prof. Chamberlain and his son drawing gravel some two or three miles in order to fix nice walks around the house, out to and through the barnyard. Think of a barnyard with graveled walks! The old-fashioned barnyard, however, is a good deal done away with. It is a luxury (!) that a modern farmer, up to the times, can not well afford. Well, Prof. Chamberlain, with the help of his son, who is educated like his father (he has not had the same years of experience, however, mind you), has been laying the 2¼ miles of tiling. I expected some wise hints in the matter, and I was not disappointed. In the first place, the two tiling-spades they use were brighter, cleaner, and sharper than any we have on our premises. In fact, they had been used until they were worn down thin, something like the knife my wife uses to pare potatoes; and I tell you it was worth going a hundred miles to see a college professor digging ditches. Why, it was not work at all—it was just fun. A pretty deep furrow was first plowed out, throwing the earth either way. Then with the two spades the ditch was put right down where it ought to be. When I wondered to see the ditching-spades so sharp and perfect on the cutting edge, friend Chamberlain remarked:

"Why, you surely take a good file along with you when you dig ditches, do you not? See."

Then he picked up a file and showed me how they used it. I am ashamed to say that I never had a file out in the field where I was digging ditches. It is true we occasionally take the spades into the blacksmith-room and have them sharpened up; but we never have them in such perfect order as those I saw. Why, they looked like fine carpenter tools. The ground came right out in nice perfect slices, and slipped off the spade of its own accord, and there were but very few crumbs in the bottom of the ditch. The last cut left the ditch at the bottom just about the width of the tile. Oh how I do wish I could find men who would not persist in digging the bottom of the ditch wide enough so they can shovel it out with a barn-shovel! Why, sometimes I am almost tempted to think I shall feel glad when these old fellows die off, especially the ones who can *not* be taught any thing new. A few days ago I took a boy of 17, on an emergency, and started him ditching. Said I:

"Look here, Frank, if you do just as I tell you, you can dig ditches right along, and do it easily, and you can dig more than a great big stout man. The only thing is, you must do exactly as I tell you."

In a little time Frank smiled until his mouth stretched wide, to find that he could indeed walk right along through the stiff hard clay, and leave a nice finished ditch. It was not an hour, however, before he and his spade somehow got "rattled," and he could not for the life of him without help get the ditch back into shape so he could do nice clean work, and do it easily. Well, there was one more thing that I learned besides about the file. Our ditching has been mostly done with a long straight-edge. If the bottom of the ditch is uneven we have to lay a brick or tile under each end of the straight-edge, so as to get the general level. The straight-edge has got to be put in place in the bottom of a ditch, and a level must be hunted up, the dirt wiped off from the level and straight-edge both, and somebody stands on the edge to see if it is just right, and caves in a lot of dirt on the level and straight-edge both. Well, our book on tile drainage has a picture of a common-sense leveling tool. The one I saw there was so light you could easily pick it up with one hand. This surprised me. I had an idea from the picture and description that it was nearly as heavy as the letter-A drag. On the cross-bar of the letter A, a spirit-level was securely screwed. Now, all you have to do is to stand on the edge of the ditch and set your letter A so it stands on both feet on the bottom of the ditch. The spirit-level is right up in plain sight, where you can see just what the general average of your work is going to be.

The following is what the book "Tile Drainage" has to say in regard to this span-level:

Mine is a home-made affair—simply a triangle, or Greek delta, 8¼ feet on each side, made of two-inch pine or poplar, plain battens, and has a spirit-level screwed accurately to the cross-batten that makes a capital letter A of the triangle. Care must be taken that the spirit-level be exactly parallel to the base of the triangle. For convenience in using, a short inch strip is tacked to each end of the bottom edge of the base. The level is graduated to show a grade of one, two, and three inches to the rod.

Friend Chamberlain, like myself, prefers to see water running down the ditch before the tiles are laid. There had just been rain enough during this beautiful month of November, so he had about all the water he needed to be sure that his tiles would all work right. You may wonder, perhaps, how a couple of college graduates could afford to dig ditches and lay tiles. My friend, the time is coming when college graduates can even dig ditches more profitably than men with abundance of muscle who are too ignorant to realize that they do *not know* too much to be taught by anybody.

It was Saturday afternoon, after 3 o'clock, and I was about 35 miles from home. At just 5 o'clock a train leaves Akron that passes through our own grounds. I stopped so long to look at the tile drainage, the wheat crop, and other things, that I knew it was going to be a hard pull to make Akron by 5. There was not any moon; and when I got to Cuyahoga Falls it was not light enough so I could keep out of the sand. I put in my best licks, however, and reached the depot just five minutes *after* the train had gone. There were particular reasons why I wanted to be in Medina over Sunday; but it was a good 20 miles, and a dark night. I began trying to reconcile myself to the prospect of spending Sunday away from home. But I did not enjoy it—that is, the prospect. I was tired out, and hungry, so I went for that well-known "city restaurant." As usual, the waiter gave me a plate of bread and a pitcher of milk, while he took my order for steak, etc. Why, it is just *fun* to live when you can enjoy bread and milk as I enjoyed it that evening. I do not know just why, but somehow or other I ate a great big supper before I left the table. Then I thought I would take my wheel and ride in the direction of home as far as the vitrified brick pavement and electric lights extended. I had no sort of idea what I should do when I should reach the end of the pavement. I knew from experience that there is a stretch of deep sand on the road, that bothers even an expert wheelman to get through by broad daylight. I somehow felt restless and uneasy, and wanted to be doing something. As I left the electric lights I saw a wayside watering-trough pouring out its liquid treasures by the side of the road. I drank so long and so heartily that a bystander whom I had not seen before in the gloom remarked:

"Well, stranger, I calculate you must be thirsty."

I pointed to my wheel. The nickel plating gleamed a little, even in the starlight.

"Oh! well, you are all right. So long as you do your hard drinking with nothing but water like that, I guess you are safe," continued he.

I thought I would go just a little way in the sand, to see what it was like; but common sense and reason soon said that it was entirely out of the question, to think of riding in such darkness on a road that was well nigh impassible by daylight. I even imagined I heard my good wife saying, in tones of expostulation, "Why, surely, husband, you are not so crazy as to think of *trying* to getting home to-night?"

I turned around and looked back at the electric lights, but I did not enjoy the prospect that way at all. I stood still and meditated. I might push on till I got real tired, and then get up and finish my trip by daybreak Sunday morning. But conscience stood in the way. I might possibly get home so early that few if any of the good people of Medina would be up; but it would be a new experience for me, since I became a Christian, to try to keep out of sight. I remember that once, years ago, I tried to get home with a bag of hickorynuts I had picked up on Sunday. I skulked along on the back streets and alleys; but the very people I did not want to see were sure to be in those back streets and alleys just then. I do not know but I said aloud, "No, sir; I am not going to do any thing, either in daylight or dark, that I am ashamed of. So long as I live, I expect to be able to say with a clear conscience to everybody I meet, 'I am A. I. Root—who are you?'"*

I think that, for about half a mile, I must have made quite a "circus," as the small boys would call it, wrestling with that sand. In a little time, however, it began to occur to me that I was learning by practice that it was possible to ride through sand, even in the dark. The rubber tire of my wheel began slowly to become sensitive, like one's fingers' ends. I could *feel* my way, and tell when I was in the track or out of it; and as skill gave me enthusiasm, that wonderful second wind began to come up as backing. Why, I thought I was thoroughly tired out and used up when I ate my supper; but now I was making fair speed in spite of the sand. When I came into the valleys, however, a new trouble met me. You may remember the heavy fogs in the middle of November. They became so dense that I could hardly see the stars, and I thought I should have to give it up. Pretty soon, however, I found that, when opposite the telephone-poles that hold a great mass of wires now running from New York to Chicago, these poles were visible. Judging from each pole as I passed it, where I should probably find the next one through the fog, and also feeling my way, as I said before, in a little time I was up to fair speed again. With the tremendous exertion required to ride in the dark, I began to get thirsty, and then I made a discovery. This heavy fog, so damp and wet that it was almost dripping, proved to be most delicious—not to drink, but to breathe; and, to tell the truth, I never enjoyed much more in my life any thing than I did those great breaths of fog-laden air while groping through darkness and fog for each friendly telephone-pole. Talk about the danger of "damp night air." Stuff and nonsense! My strength seemed herculean. I never before in my life thought it was *possible* to climb over obstacles and plow through sand as I did it that night. Yes, I *had* been praying that God would help me in my efforts to "remember the Sabbath day, to keep it holy." When I first undertook it, it seemed a tremendously long and tiresome task; but to my great surprise it gave me a degree of enjoyment that I never before realized was possible for humanity. Within nine miles of home I passed another watering-trough. I had it in mind, but I passed it in the fog, and heard the gurgle of the water only after I had got by. I left my wheel standing in the road, and went back for a drink. Oh what a delicious liquid beverage! Did God indeed have in mind such enjoyment for his people when he planned this universe? I went back to the place where I left my wheel, but it was nowhere to be—not seen, for I could not see it a yard before me. Just as I began to be troubled, my hands struck the fog-laden nickel plating. Of course, I passed people on the way. Some of the time they could see me dimly, and some of the time they could not; but I did not feel like evading nor avoiding anybody. I gave every passer-by a pleasant "good-evening," and received one in return.

At half-past nine I was safe in my own home. Was I worn out and used up next day? Not a bit of it—quite the contrary. For three or four days afterward I enjoyed an unusual appetite, and more than ordinary vigor and energy for work or play. After that I began to settle down into my average health. Just this one thing I noticed: I could not sleep as usual that Saturday night. Sunday morning, however, just before church time, I slept about as usual; and the night after, I did some "tall" sleeping.

Dear friends, I have gone at length to tell you this experience, as it illustrates so vividly that we oftentimes reap our richest blessings when we undertake some fancied hardship in order that we may obey God's holy commands.

Prove me now herewith, saith the Lord of hosts, if I will not . . . pour you out a blessing that there shall not be room enough to receive it.

* Had it been necessary to ride my wheel on Sunday, to meet an appointment at a Sunday-school or other place where I was wanted, I should have had no hesitation whatever; for, in fact, I do use my wheel almost every Sunday in that way But in this case, by my own want of forethought I had missed the train; and to be seen riding twenty miles on Sunday morning, with every evidence to passers-by that I did it simply to save time or to get home, was not an inviting prospect before me. If the Christian people of our land would do all they can consistently, and within the bounds of reason, to discourage Sunday travel of every sort, I am sure we should be a better people than we now are.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

PRIZETAKER ONIONS IN ARKANSAS.

I have grown Spanish King (Prizetaker) onions for three years. They are the finest ever grown here, and the most profitable. My last crop was nearly one-third mixtures. Have you any old seed that proved to be pure this year? If so, at what price can you furnish it? Do you think it will do to sow this fall, and transplant in February, when we sow oats? Our spring crop of onions ripening in June, or early in July, generally keeps only a month or so before they rot. Can you tell me how to prevent the rot? If planted the first of July will they ripen and dry out so as to keep if the fall weather is cold and wet? Nearly every thing grown in spring rots during our long hot summers. I think of preparing to irrigate, so as to plant late and mature my crops after the hot summer is past. I think of making a specialty of onions. Please tell me how to grow onion seed from those Spanish onions. I plant-

ed some in February, when we planted onion-sets, garden-seed, etc. They froze and rotted. As the new culture takes so little seed, it will pay me to have *pure* seed at $20 per lb.

Malvern, Ark., Nov. 8. P. C. SHOCKY.

[Friend S., we have some old seed left that we expect to sow in the greenhouse; but I can not recommend it as being *extra* first-class. It is, however, probably as good as any in the market. I agree with you, that you can afford to pay $20.00 a pound for seed that would produce a good nice-shaped onion every time, all uniform. I fear the Prizetaker and other onions of that class will rot with you, any way; and may be even our Globe Danvers and Silverskin, noted especially for their good keeping qualities, would do the same. But I have had no experience in your locality. We have given through GLEANINGS our experience in growing seed from the Spanish King onions. We have had no trouble at all, and have quite a lot of very large fine onions that we are keeping for planting for growing seed next spring. I think you will have to put out the big onions after all danger of freezing is past, if you want to raise seed. Perhaps some of the readers of GLEANINGS can help you more than we can.]

OTHER USES FOR POTATO-BOXES.

Not only do we use these for storing all kinds of roots, potatoes, apples, etc., but while I am writing, Nov. 22, our hands have been packing our celery, as fast as it is dug, right into the potato-boxes. We lay the boxes on one end, then take up the celery, with a little earth adhering, and pack it tight and close in a box, till the box is full. After being filled, the boxes are turned over right side up. The celery can now be loaded into a wagon or other vehicle, without any extra handling, and without breaking and mashing the tops; and it is but a short job to lift it out and set the boxes tight up together, in a dark cool cellar or other repository. If the cellar seems to be too dry, and inclined to wilt, the whole floor of it may be flooded with water, letting it go through the bottom so as to dampen the roots, but without wetting the tops in the least. So far as I know, this is the first time celery was ever handled in this way. But please notice: While we were loading it up near the roadside, a man stopped his team and wanted to know why he could not take one of those boxes right along, put it into his cellar, and use the celery as they wanted it. I assured him it was exactly in the shape he wanted it for that purpose. Selecting one of the best boxes, when he found he could get box and all for a dollar he handed over the money, and the boxful of celery was in his wagon in a minute. You will notice this fixes it in nice shape to retail, so that people in the country or anywhere else can use it all along through the winter, just as they want it.

POTATO-BOXES FOR PURCHASERS OF POTATOES.

I have mentioned in the previous pages of purchasing a carload of Monroe Seedlings, just as they lay on the ground. The farm where they were grown is about 25 to 30 miles from our place. Four hundred and fifty empty potato-boxes were stored in the car, which was then sent to the nearest station to the grower. Although in the latter part of November, the grower loaded the boxes on to his wagon, took them to his cellar, filled them, and set them back on the wagon, then made a trip to the car, bringing another load of boxes. On Wednesday, the 22d of November, the Weather Bureau notified us by telegram that a cold wave and a blizzard would reach us Thursday night. The notice was given us about 36 hours ahead. The railroad companies were notified that several hundred dollars were at stake; and the managers of our own railroad, the Pittsburg, Akron & Western, were considerate enough to hold the train half an hour so they could get the potatoes through and enable us to save them from the frost. The car was planted on our side-track at just 5 o'clock. We had notice of its coming, and eight of our men and boys were invited to go into the lunch-room and have a good supper, so that they might be ready to handle the potatoes before Jack Frost could nip them. The thermometer showed only 15 degrees above zero, and there was a brisk west wind. The boys, however, handled the potatoes so quickly that, within two hours, the whole carload was safely deposited in the cellar, and the doors and windows closed. You may be sure I drew a long breath of relief when the last box went away. I guess the boys drew some long breaths too. It was worth something to see the way those boxes full of potatoes moved into the place assigned them. Now, here is a little to the credit of our Weather Bureau. They have been criticised during our recent drouth because rains did not always come when they told us conditions were favorable; but as to the matter of temperature they made hardly a mistake; and I am glad to be able to say, also, that at least one railroad company in the United States was willing to hold a train half an hour for the sake of saving a carload of potatoes.

Suppose these potatoes had been picked up or shoveled up, poured into the car, picked up or shoveled up again, and poured into our cellar. Think of the bruising and injury, aside from the convenience and neatness in doing the work. Another thing, as a great part of these potatoes are to be sold at retail, many customers will pay 15 cents extra for the privilege of taking the nice new clean bushel boxes home with their potatoes, for almost every family will find these boxes, that hold an exact bushel when level full, exceedingly handy to have in the cellar, barn, or other out-buildings.

OUR HOMES.

SOMETHING ABOUT WARMING THEM.

You may think my experience with hot water and exhaust steam has little to do with you unless you also have exhaust steam near you that can be utilized. But, wait a bit. After we had carried the exhaust steam from our large engine through drain tile over to the house, we turned it into an iron pipe going up above the roof. This was to give it draft, and to make the steam pull through quickly. To my surprise, there was steam enough, and a surplus puffing out above the roof, almost every hour when the engine was running. Said I, "Look here, Mr. Exhaust Steam, we will cure you of that trick." So I went to work and carried a three-inch iron pipe under our floors, clear around the wall of our large cellar. The cellar goes under the whole house, and it takes 140 feet of piping to go clear around. Then we carried it over to one of the tallest chimneys, and 30 feet more of piping was used to go out of the top of the chimney. The steam crawled along through the pipe, seeming a little uncertain as to what it ought to do; and it was noon before it got quite around to the chimney. About 2 o'clock, however, enough heated vapor got into the upright pipe to make a draft, and then it pulled through beautifully. This long pipe, however, with its many turns and elbows, so effectually takes up the latent heat of the steam that it is about all gone when it comes

to the exit at the top of the chimney. The moisture is also condensed; and as the pipe through the cellar runs on an incline, the hot water all goes off through proper drainage. Now for the result. Almost the whole floor of our house is kept constantly so warm that you can get around in the morning barefooted on the painted floor of the kitchen, without giving you the toothache; and I tell you it is worth a big lot to feel even the carpets under your feet constantly warm. The moral you are to gather is this. The first thing toward warming your buildings should be to make the *floors* warm. If your house is not well banked or well protected all round, go at it and do it all at once. Make the cellar-windows so they can't rattle, or so you can't feel the breeze around the cracks; and I feel sure that *double* windows will soon pay for themselves in the one item of fuel; and for the outside entrance of your cellar, you want at least *two* well-fitting doors. We did not have two till last winter; and when we put in the extra one, and had it fit very closely, the change in the temperature of our floors was perceptible at once. Now, after you have done all this, if you will put a stove in your cellar, and make the cellar itself warm when the weather is very cold, I think you will find it not only a saving of fuel, but very likely a saving in doctor-bills; and it may save the life of some precious little one who is now spending the most of its time with its playthings on the floor. Dear father and mother, can't you afford to give this precious little chick a warm comfortable floor to play on? While you think of it, just catch him up and give him a kiss for his Uncle Amos. I forgot to say that, after the exhaust steam has passed through 400 feet of hot earth, it forgets to stop work when the *engine* stops; and even this *exhaust-steam* pipe is hot all night for fully half its length. This, of course, is in addition to the hot-water pipes. They are only 1¼-inch iron pipe, and they, together with the radiators in the rooms above, keep hot all night, and remain hot over Sunday and tolerably hot even *Sunday* night.

TRADE NOTES.

SHALLOW HIVES AND FRAMES.

SOME STRONG POINTS IN THEIR FAVOR, AS SET FORTH BY ONE WHO IS USING THEM.

Mr. Heddon's item on p. 818 wakes me up a little; and as you invite further remarks from *somebody*, as I understood it, that may mean me, as I am more interested in the Bingham hive at present, probably, than any one else (the patent having expired). I still have about 80 colonies in the Bingham hive, and prefer it to any other for profit and convenience in handling, as I have used it for over 20 years with more or less success, and have tried others in my yard side by side, notably the ten and eight frame Langstroth hive, the square-framed hive (frames 10x13), the Shirley hive, and others.

COMPARATIVE TESTS BETWEEN SHALLOW AND DEEP FRAMES.

My first fair trial on their merits for surplus was with the ten-frame L. hive. I bought ten of them of Mr. House (then of Saugatuck, Mich.). All frames were well filled with clean comb. I increased by natural swarming at that time (16 or 18 years ago), so I put a first swarm in the L. hive, one in a Bingham hive, and one in an L. hive, etc., alternately. All of these were put up in precisely the same manner as nearly as possible, with boxes for surplus, until the ten L. hives were full. At the end of the season I counted up boxes full of honey (as I had marked each with the hive number. We used the small 2-lb. glassed honey-boxes, thin), and I lost on an average $1.00 and a few cents on each L. hive in use, merely in surplus honey, without any reference to prices of hives; that is, I mean I made $1.00 surplus more on each Bingham hive in use in the experiment. I tried a part of the wintered-over colonies next season with nearly the same result, thinking that, perhaps, it would be a fairer trial—as the swarms in the Bingham hives had their surplus well under way before those in the L. hives had begun on surplus, or had the hive body all occupied. I also tried the same variety of hives in wintering, both outdoors and in the cellar, with results favorable to the Bingham hive generally—always so in a severe season out of doors. I used only the L. hives after that, for extracted honey, and I will say they came quite handy to "pile up" on top of the Bingham hives to "sling" honey from, as the L. cases are rabbeted to fit each other.

I next tried the eight-frame L. hive a few seasons (in 1880, '81, '82, I think), just after our big loss (I bought a few from Indiana to fill up). Well, they did some better than the ten-frame L.; but compared side by side with our old Bingham hives they were far behind for comb honey, especially in short honey-flows. So I traded them off when I could fairly; and, in fact, that was my object in trying to get started with the L. hive; viz., to have a hive I could sell bees in, as the L. hive is well known and popular. I have tried the eight-frame L. hive ever since with one or two hives, and find I generally get three cases of sections each of 24 on the L. hive, in nearly the same time that I get *two* cases each of 44 sections on the Bingham hive. But the second case on the Bingham hive is nearer finished than the third case on the L. hive at the end of the flow, generally, and especially in the time of a short flow, or a gradual closing-up of the honey season. Of course, there is a reason for these things. First, the surplus is so close to the brood in the Bingham hive that the bees carry nearly all (or in some cases *all*) of the honey into the surplus chambers, excepting that used for brood-rearing, which, by the way, is considerable, and is a very important factor in the problem. Toward the close of the honey-flow there can always be found sealed honey over the brood-nest, and this space of honey is always deeper in deeper frames. Sometimes it is only a thin line in these extra shallow frames; and the first tier of sections receives all or nearly all of that good honey. On the same principle as when tiering up, more honey is obtained if the first tier is raised up and a light case is put under it.

Now, the upper part of deep combs takes the place of the lower tier of sections as soon as the brood-nest is beginning to contract; and with the additional item that the combs are all built out to receive the honey. Of course, the Langstroth hive will have more honey in the brood-chamber—sometimes *too* much. On the other hand, the Bingham hive needs to be looked to in the fall, to see that there is honey enough for winter.

SHALLOW FRAMES FOR WINTERING, AND THEIR ADVANTAGES.

As to wintering, the problem may never be wholly settled, possibly, so we can all see it alike. The bees naturally cluster near the center of the frames, directly under the sealed honey, or the most of it; and if the frame is

deep, and a wide belt of honey over them, after they use this first supply they have farther to go to find more stores, as they often move in mild spells, as we say when the cold lets up. Hence dwindling in winter is the result, because the bees in search of food become chilled on the cold combs as night comes on, and drop; or after the first supply of honey over the brood-nest is exhausted, say toward spring, and the cluster, in trying to move back to more stores, or to one side in the L. hive, has to move up and over that thick top-bar, or under the comb. Being obliged to leave the center, the bees become chilled by sudden changes of temperature, especially if so near spring that a brood-nest has been started, and the cluster will not leave it for stores. This means spring dwindling, and sometimes starvation with plenty of honey in the hive—the more so if a cold snap sets in. The shallow frame is less subject to these conditions, because the bees cluster clear to the top and nearly to the bottom, and so do not have to leave the warmth of the brood-nest or cluster to go to the next frame, and the cluster gradually moves backward to more food toward spring. There is usually enough stored toward the ends of the frames, with what little is near the top to last through the first cold weather.

It is my habit to take out the light combs in front when I put the bees up for winter, and move some of the heavy combs at the back to their place, and close up the back board to 8 or 9 frames, say, instead of 10 or 11, as used in surplus time. This gives more room for packing, which is one more good feature for the Bingham hive.

The original Bingham hive of this style now in use was 10 frames, 20 inches in length by 6½ in depth, from hive-bottom to the top of the wooden frame. This gave about 5 inches up and down of brood-comb, besides the short cells on the under part of the top-bar, which is a square bar set cornerwise. This was the size in the patent-papers, and the same as I use now, though Mr. Bingham used them 22 inches ong in his own yard.

THE SHIRLEY SHALLOW HIVE AND FRAME.

The Shirley hive was invented and patented just before the new Heddon hive. The frame is 19½ long by 5½ high at the end of the frame, with both top and bottom bar, and is reversible. It has comb space only 4½ inches deep, and was intended to winter by tiering up, half of the frames on top being reversed. This gives the bulk of honey near the center of the brood-chamber, with a bee-space through the center. This is the best arrangement yet known, for wintering outside, as the bees can pass freely from one side to the other without leaving the cluster. In fact, the cluster of bees can move gradually in very cold weather. I have wintered a few in this way as an experiment, and they did well. The new Heddon hive can be handled on the same principle, but it needs a packing-case for outdoor wintering, and is all right then. Both need looking to as to the winer supply of honey, all the same.

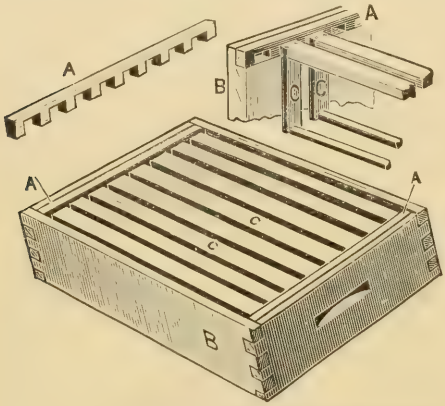
Now, Mr. Editor, I have no ax to grind in this matter; but I never could understand why a bee-keeper who is after surplus should use such deep frames as in the L. hive, after havng tried shallow ones. J. O. SHEARMAN.

New Richmond, Mich., Nov. 4.

[You have given some strong points in favor of the shallow brood-nest and frame, and we must acknowledge that they do have some quite decided advantages. In your locality they may give better results, perhaps, than any thing else; but localities differ so much that what will be just the thing in one is totally unsuited for another. The testimony as to the value of the various devices in the different localities, called forth at the last convention of the N. A. B. K. A. at Chicago, illustrates this very forcibly. For instance, the Dadants, J. M. Hambaugh, A. N. Draper, and other bee-keepers in that vicinity, furnish quite convincing arguments in proof of the statement that the large Quinby frame and hive give better results than the small brood-chambers. In most northern localities the eight-frame Langstroth capacity seems to give best results: but no one can assert positively, if he is unbiased, and has carefully read the reports from the South, that the ten and twelve frame Langstroth hive may be too large, especially where extracted honey is the object. Within the vicinity of our correspondent there is Mr. James Heddon, Mr. Bingham, Mr. W. H. Shirley, Mr. R. L. Taylor, and quite a number of others, who use shallow brood-chambers; and while we may admit that the large Dadant hive, for the locality of the Dadants, and the ten and twelve frame Langstroth for Texas and the South, seem to give the best results, we must not assert that the shallow hives are not the best for the localities in which they are used. Now, if we go east, into the locality of Hetherington and Elwood, we shall find thousands of colonies on the Hetherington-Quinby frame—a frame not quite as long as the original Quinby, but quite a little larger than the Langstroth. You could no more induce these York State bee-keepers, who have carefully tried large and small hives together, that the latter would give the better result, than you could convince them that the earth is square. We do not mean to say that those intelligent bee-keepers of the East are stubborn, and proof against any kind of argument, no matter how convincing; we simply mean to say that they have carefully tested their locality, and know pretty well what gives them the best results. The question, then, as to the best size of hive for any particular locality is largely dependent upon the fact of whether (1) the honey-flow is moderate and long-continued; whether (2) it is heavy, and lasts only a few days, or (3) whether it has only a few light spurts during the season. As supply-dealers we have endeavored to adopt that sort of hive and frame for the *mass* of bee-keepers that is a compromise between the very shallowest and the very deepest, and a brood-chamber that is a compromise between the very largest and the very smallest, and one, too, that best meets condition No. 2 above. Recognizing that there is a demand for a large hive, we make and keep in stock the eight and ten frame Dovetailed hive, and, upon order, the twelve-frame. We also make, and have made for the last ten or fifteen years, half-depth brood-frames and hives, because we find that there is a demand from some sources for hives and extracting-supers of this description. But it is safe to say, that nine-tenths of all the bee-keepers prefer and order the eight-frame Langstroth.

Now, we do not wish to throw cold water upon the very strong points in favor of the half-depth hives, referred to by our correspondent above. To be candid about it, we will say that the demand seems to be growing for these shallow hives; but the call has been more particularly for them as shallow *extracting*-supers than as shallow brood-nests. To show what we have been selling for a good many years back, and more particularly for the past year, we present below an engraving of our half-depth Dovetailed hive and frame. It is put in our catalogue as a shallow extracting-super, two of them being sold at the same price as one full-depth extracting-super with Hoff-

man frames. Believing that these shallow hives should have the frames secured, we have adopted the very simple arrangement shown in the cut. It consists of two notched sticks that slip into place in the rabbets in each end of the hive. The sticks are of such a width, and the notches are of such a depth, that they fill up entirely the space between the ends of the top-bars. The ends of the frames and the rabbet itself are thus entirely protected from propolis; and while the notched sticks can be secured by a couple of wire nails, buttons, or similar devices, there will usually be propolis enough to hold them in place; because, when the cover is set down on the hive, the sticks will be held



THE DOVETAILED SHALLOW EXTRACTING-SUPER.

firmly in place. As the bodies are just half the depth of the regular eight-frame Dovetailed bodies, the frames are only 4½ inches deep, outside measure. Such shallow frames require no spacing-strips at the bottom to secure the frames, like ordinary full-depth frames.

As these small frames are secured, the extracting-supers can be shaken violently to get the bees out without disturbing the frames. The supers are intended to be handled without disturbing the frames until they arrive at the extracting-room. The spacing-sticks are then removed at each end, and the whole set of frames are loose, because propolis has no chance to make them stick. Being shallow they are easily uncapped, and two of them are put into the ordinary comb-pockets of an extractor at once. Thus an ordinary two-frame extractor will extract four of these at a time. These frames are then put back in the supers; notched sticks are replaced, and the whole set of frames, including the supers, are put on the hive at once. The point of economy in these shallow frames for extracting seems to be in handling whole supers at a time, leaving the question of individual frames largely out of account. But their advantage lies chiefly in the fact that half an ordinary extracting-super can be given at a time, on the principle that it is better in the production of comb honey to give only one tier of sections at a time than two. Then these shallow extracting-supers may be tiered up precisely like comb-honey supers, and manipulated largely in the same way. For instance, when the bees have got nicely started in one extracting-super it is raised up and another empty one is placed between it and the brood-nest.

The super-shells are precisely like the supers for comb honey, and can be used interchangeably for one or the other.

In setting forth the advantages of the shallow extracting-supers, please do not understand that we are saying any thing about their use as brood-chambers, although they may be used on exactly the same plan outlined by our correspondent at the head of this department.

The question may come up, whether, if such use is made of them, a royalty should not be paid to our Dowagiac bee-keeper. If we understand the matter, Mr. Heddon does not claim the *manner* of using brood-chambers as specified by our correspondent. All he claims is the peculiar construction of the brood-chamber as he makes them, with close-fitting closed-end frames and shallow brood-chambers.

Another question may be asked as to how generally these shallow extracting-frames are selected in the orders. Although we supply our customers with both the shallow extracting-supers and the full-depth extracting-supers, one pair of the frames at the price of one of the latter, very few, comparatively, have selected this sort of arrangement, although the number is now increasing somewhat.

GLEANINGS IN BEE CULTURE.
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.
ILLUSTRATED SEMI-MONTHLY
36 PAGES 7×10
$1.00 PER YEAR.

The Son of man came not to be ministered unto, but to minister, and to give his life a ransom for many.—Matt. 20:28.

Prof. Cook is now on his way to California, where he expects to make his permanent home. Further particulars will be found in another column.

Mr. Doolittle, in his article in this number, says old foundation is as good as new. If he is correct, and we hope he is, it will save some bee-keepers from melting up and making new. How is this, friends?

We have in hand some pretty convincing evidence convicting a prominent Western bee-keeper of adulterating honey. Manager Newman, of the Bee-keepers' Union, has the matter in hand, and will shortly make the matter public, probably.

A prominent, interesting, and valuable feature of the last convention was the rising votes. While objection has been made to this way of getting an expression, it is, nevertheless, valuable because the reports can be taken from the whole convention without taking more than a minute's time. We are heartily in favor of the rising vote at conventions when properly managed by a good president.

It is just announced that Vermont is to have an Apicultural Experiment Station. The State Bee keepers' Association has been laboring for several years for the establishment of such a station, and has now attained success. No apiarist has been appointed yet, and there seems to be a little uncertainty as to who will be the best man. What is the matter with J. H. Larrabee? He is eminently qualified by experience in this very line.

Mr. H. R. Boardman, from the report which appears in another column, made quite an interesting statement, to the effect that a new swarm would gather twice as much honey as the new swarm and parent colony combined before swarming takes place. Mr. Boardman is a very careful bee-keeper, and the question may arise whether we are not indeed wasting too much time in discussing *prevention* when we ought to be discussing *controlling* swarms.

Mr. Hasty, in commenting upon Taylor's tabular report showing results of the much or little use of foundation in the brood-chamber (noticed by us on page 795), says, in the *Review*, "And, don't you see? the experimenter draws conclusions favorable to foundation, and the editor draws conclusions favorable to starters, from the *same big table*." Italics ours. That's the way it struck us at the time. Bro. Hasty, the *best* of us are just a *teetle* prone to see through our own specs—what, what—we *want* to see.

Bro. York, of the *American Bee Journal*, referring to the time we sat in the same chair at the "Big Convention," and to the hope that we shortly after expressed on these pages, that these pleasant relations between the editors might never be *strained*, heartily indorses this sentiment, and adds that he hopes they will never be worse than *strained honey*. Dr. Miller also indorses the sentiment, but insists that the *chair* upon which we sat was strained.

We recommend a careful reading of the proceedings of the "Big Convention" at Chicago. President Miller steered the discussion with wisdom and tact; and the result was, that only important questions were brought up and discussed. The fact that these discussions came before the largest and most intelligent body of bee-keepers that ever assembled at one time and place in this country should make the proceedings of more than ordinary value to the reader, even though he has to "see through a glass darkly."

"WORNOUTNESS" OF WINTERING.

Perhaps some may have been wondering why we have had less in Gleanings on the subject of wintering of late. In the first place, we knew that our readers of the North were tired of it; in the second place, those in the South and the far West have no interest in it. For these reasons many of the articles on that subject have either been returned or turned over to the so-called "waste-basket." That this lack of interest is shared by some prominent writers is evidenced by the following from Mr. Hasty, who has been speaking of the wintering symposium in a late *Review*. He says, "No use of trying to deny that there is a certain air of wornoutness about the lucubrations on wintering. Although we winter our bees on honey, we winter our readers mainly on *chestnuts* [subdued applause]. But, brethren, when we get it all found out we won't give you any thing at all except chestnuts—then what will you do? Better winter on chestnuts, and save the bees, than on paradise nuts and lose 'em."

We don't mean to carry the impression that we shall reject all articles on wintering, for that would be shutting our eyes to real progress. We shall endeavor to use a wise discrimination. It had been better had we last year discriminated against the sealed-cover idea, or, at least, given only a small dose of it.

MRS. ATCHLEY'S NEW HOME.

Mrs. Atchley has moved from Greenville, in the northern part, to Beeville, in the extreme southern part of Texas. Few of us, when we saw the announcement, realized that she had moved so far south of her old home. Texas is a large State—in fact, the largest in the Union; and to have gone a similar distance in the North would have taken her, not only in most cases out of the State, but into another, and in some cases across three or four others, or as far as from Cleveland to Chicago. Mrs. Atchley is as far south as she can be, and yet be a resident of the United States. A glance at the map shows that she is but a few miles from the Gulf, and further South than the generally inhabited portions of Florida. She can rear queens the year round; in fact, is better situated than any other queen-breeder in the United States. She is in the region of orange, bananas, and other tropical fruits, as samples of which she has kindly sent us fully testify. By the way, in that basket of fruit was a can of some of the finest honey we ever had in point of color and flavor. It tastes not unlike alfalfa, than which there is no finer honey in the world. Mrs. Atchley and her family are not only the largest queen-breeders in the world, but in the very best portions of it.

THOSE YELLOW CARNIOLANS, AGAIN.

And now Mr. Alley has turned his gun from Dr. Miller to us. A short time ago, in answer to a correspondent on page 676, we said:

> Frank Benton, who handled the bees for years in their native home, says that the typical Carniolan is a dark steel-gray bee. The so-called "golden" Carniolans seem to be nothing more nor less than Italians with, perhaps, a little Carniolan blood; for Mr. Alley admitted that his golden Carniolan queens were mated in an apiary but a little over a mile from a large apiary of Italians. Plenty of proof has been produced to show that queens will mate, not only a mile from the apiary, but sometimes three or four miles. The source of the yellow in Mr. Alley's Carniolans is plain. See J. A. Green's article in the *American Bee Journal*, page 467, vol. xxviii.

Mr. Alley denies this in toto; and strangely, enough, he proposes to put up money in support of his denial. Seriously, we do not believe in settling things in that way. No, Bro. Alley, to ignore the plain facts of experience—facts supported by all practical bee-keepers—that drones and queens will fly over a mile, and often much further at mating times, and to try to bolster up the statement in opposition to it by putting up money—well, let the reader draw his own conclusion.

Regarding the statement Mr. A. makes, that gray Carniolans will develop into yellow Carniolans in three or four generations, Mr. Lockhart, an extensive breeder of the former, says in a letter just received:

> Mr. Alley is *away off* when he says that he can change the gray Carniolans to a yellow race of bees by breeding them to the fourth generation. I have bred the gray Carniolans long enough to know this; for the past four years I have not seen any yellow-banded bees from any *purely mated Carniolan* queen. F. A. Lockhart.
>
> Lake George, N. Y., Nov. 23.

This is substantiated by other breeders of Carniolans, and ought to set aside Mr. Alley's position on that point.

POLLEN NOT THE CAUSE OF DYSENTERY.

S. Corneil, in the *Bee-keepers' Review*, says, "Not only is there nothing gained by the exclusion of pollen from winter stores, but its presence is essential for the bees," in support of which proposition he gives good substantial proof. Mr. Heddon has been advocating for several years back the entire exclusion of pollen. Commenting upon this, Mr. Hasty says elsewhere, "Heddon's no-pollen test, and 72 out of 73 O. K. in the same cellar, where two-thirds of those with natural stores died with dysentery, looks like knock-down evidence. It probably is conclusive as to such a wickedly cold cellar;" and he adds, that, even if the temperature of the cellar had been right, there is no proof that the pollen would have done any harm. Corneil and Hasty are probably not far from the truth. In later years we have paid no attention to pollen; and, with the exception of last winter, when we tried the sealed cover with such fatal work, no one can point to better results in win-

tering than we. Some of those who have been the most strenuous in the advocacy of no pollen, and have lived up to that advocacy, have lost the heaviest. In late years the questions of pollen or no pollen, poor or good stores, have had very little to do with the matter of wintering. As Mr. Hutchinson well says, we can't put our finger upon any one thing, and say positively that it causes dysentery. Bad stores that were supposed to have caused the disease one winter seemed to be perfectly wholesome the next, even though bees were put upon the same combs upon which colonies the previous winter died.

FRANCIS HUBER AND HIS ACCUSER.

Be sure to read the "Book Review" on p. 881 of this issue. While these reviews, as conducted by W. P. R., have contained far more interest than such reviews usually do, the one in this number is particularly rich. It shows that great and good men like Huber are not free from the lash of the tongue that delights more in *de*struction than *con*struction. This review is interesting in another way: The light of the past and present vindicates Huber rather than his accuser. We see illustrated again how opponents in controversy will often pervert the statement of the criticised; for instance, Huber never said that queens would *talk* French, but perhaps said that they would "quahk"—a word resembling the French word *quoique* meaning *although*. Huber's opponent has all through attacked, not what Huber actually said, but what he makes him say. History repeats itself. While we hope mankind is better in this respect nowadays, there is still room for improvement.

By the way, our collection of ancient bee-books is nearly exhausted. We should like to continue these reviews further, and we should be glad to get track of any old books not noticed yet. If we can not secure the loan, perhaps we can purchase them; but don't send them on without first writing us, as we have a few books still left on hand unnoticed.

CAN A SALARIED STATE OFFICER SELL THE RESULTS OF HIS LABOR TO PRIVATE INDIVIDUALS?

A question has been raised by the editor of the *American Bee Journal* as to whether R. L. Taylor, a salaried officer of, and an experimenter for, the Apicultural Station of the State of Michigan, has a right to sell his reports to the editor of the *Bee-keepers' Review*. As a rather nice point is here involved, and upon which good men may differ, we had decided not to bring it up in our columns. We may say, however, that this same thing has been done for agricultural papers by experimenters at agricultural stations; but the wisdom of such a course has been seriously questioned. In the case of Mr. Taylor and the *Review*, it ought to be stated that Mr. Hutchinson spent no little time and money in getting this station started. He was also largely instrumental in establishing a valuable precedent by which other States are following suit.

The usual method of sending out reports from these stations is, to issue a bulletin a long time (usually a year) after the experiments were performed, and when interest has died out. A government bulletin, as a general rule, does not and can not dish out these reports in a form as popular and comprehensive as a real live journal, to say nothing of the fact that the bulletins are out of season. A report, to be valuable, should be given a mouthful at a time, periodically, and *fresh* from the field when the flavor is at its best.

So far all of us can join hands; but when it comes to the matter of giving these reports to some particular journal for money or other considerations, there is a question. We may be wrong; but we are under the impression that, when Bro. Hutchinson and his associates went before the Board, asking for the establishment of an apicultural station, there was an understanding with the Board that Mr. Hutchinson, by reason of the time and pains he had taken in the matter, should have the right to have periodical reports, he to pay for the privilege of first publishing the same. Then, too, if any journal should have the first reports, naturally it would be the journal in the State of Michigan, because this station was a State affair.

If there was not this understanding with the Board, then there is a question whether Mr. Taylor can sell these reports, although he would have a right to give them outright, if the Board do not object; but if we are correct, they have not objected as it is. The whole question hinges on what understanding was had with the "powers that be."

THE ANNUAL PRODUCT OF COMB HONEY IN THE UNITED STATES.

A few months ago we hinted at the possibility of approximating very closely the number of pounds of comb honey from the number of sections sold during that year. It has now come to pass that three-fourths of all the sections made are turned out from not more than three factories. It will be a comparatively small matter for these factories to report the number of sections they have sold during that year. We estimated that, if we knew the number of sections sold, we could approximate the number of pounds of comb honey by deducting a certain amount for sections left over not filled, because most bee-keepers order in excess of what they think will be their actual needs for the season. There will be shrinkages from other sources, such as the fact that sections do not hold a full pound, all of which could be taken into consideration. While this might be, to a certain extent, guesswork, the results would be far more accurate than some of the ridiculous guesses founded on practically no data as to the number of pounds of comb honey produced annually in the United States.

As some of the manufacturers, especially some of the smaller ones, might hesitate to place their annual product of sections alongside of that of the large factories, we have thought we could obviate this difficulty by having the reports all sent to an individual who has no interest in supplies, and who would keep all such reports strictly to himself, not even letting us know, and who, after all reports had been received, would give the sum total to us as publishers. In looking about for the right man, our minds turn toward Dr. Miller, a fair man, and who knows how to keep things to himself. We therefore appoint Dr. Miller as a committee of one to collect reports from all section-makers as to their annual product of sections for the United States. After making up the sum total, he is to have full latitude to estimate various shrinkages, and from that compute the number of pounds of comb honey.

Now, to make this a success every manufacturer should report to Dr. C. C. Miller, Marengo, Ill., as soon as possible after Dec. 31 next. We do not expect the section-makers to do this service for nothing, and would, of course, be willing to pay a reasonable sum for the service. But, suppose manufacturers won't report. Well, then we are powerless to do any thing. We assume, however, that their loyalty to the pursuit, and a general desire to know how much comb honey is produced annually, will insure the reports. But will they be honest about it?

As we run over the names, we have no fear on that score.

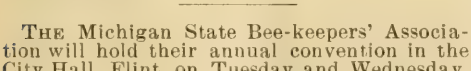
It goes without saying, that we want only the number of sections manufactured for this country. Those made for other countries must not be included in the list.

Now, Dr. M., we stand ready to help you, but we are not to know what our competitors turn out annually—in fact, no one but yourself and women-folks.

THE Michigan State Bee-keepers' Association will hold their annual convention in the City Hall, Flint, on Tuesday and Wednesday, Jan. 2d and 3d. Secretary Hutchinson says the meetings will be held in the Common Council Chamber, a room remote from the rattle of the street, and nicely carpeted, and furnished with chairs, desks, lights, etc.

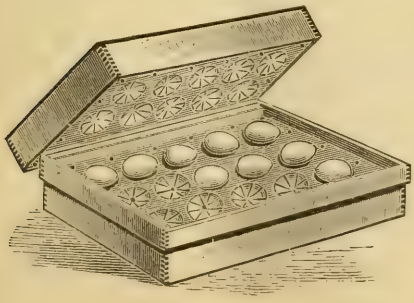
SPECIAL NOTICES.

"OLIVER TWIST" PENHOLDER.



If you have ever been annoyed by trying to remove an old pen from your penholder, when, from the action of the ink, it has become rusted in, you will appreciate one of the holders shown above. With this you need not even soil your fingers, as it is not necessary to touch the pen—simply turn the hood or revolving end of the holder, and the old pen is thrown out. It is made of hard rubber, so that it can not rust or get out of order. It is handsome and durable. Price 25 cts.; by mail, 28. Given free for one new subscription to GLEANINGS, sent with your own renewal and $2.00.

COSTELLOW'S EGG-BOX.



This is an invention of great value to poultrymen in general, and to those who ship eggs for hatching in particular. The box is complete in itself, nothing in the way of packing being required. It is only necessary to place the eggs in the box, and fasten the cover down; they are securely held in place by light springs, which allow no play in any direction, but which hold them suspended in the center of the box, where they are secure from all jar, thumping, or breakage.

The springs are so constructed that they will hold with equal security and ease any size of hen's egg. The single box will successfully carry any number of eggs from one to fifteen, and the double box any number from one to thirty. We can supply this box to carry bantam, also duck, goose, and turkey eggs, without extra cost.

The cover is secured by metal fastenings on each end, not shown in the engraving. It is well adapted to keeping eggs for higher prices, as, by turning the box over every few days, eggs in it will keep sound and good for six months or more.

PRICES.

	Sample.	Per doz.	Per 100.
15-egg box	$ 25	$1 80	$12 50
30-egg box	35	3 00	20 00

It is lighter than any other package that you can use with equal safety, as well as being cheaper. The 15 box weighs only 1¼ lbs., and the 30 box 2¼ lbs.

PRICE OF WIRE NETTING REDUCED.

We have made our contract for a supply of galvanized wire poultry netting and fencing for the coming year, which enables us to offer much lower prices from now on. We submit below a table giving the net price of a single roll of netting 150 ft. long, of the various sizes of mesh and wire. If you order five rolls, any one or assorted sizes, deduct 5 per cent from these prices; on 10 rolls, deduct 10 per cent; and on 25 rolls or more, deduct 15 per cent. This latter price for the 2-inch No. 19, or regular poultry size, is equal to *half a cent per sq. foot*—the lowest price at which we ever sold this netting.

Mesh	No. Wire.	12 in.	18 in.	24 in.	30 in.	36 in.	42 in.	48 in.	60 in.	72 in.
3 in	18	$ 80	1 20	1 60	2 00	2 40	2 80	3 20	4 00	4 80
3 "	16	1 33	2 00	2 67	3 33	4 00	4 67	5 33	6 67	8 00
3 "	14	2 20	3 30	4 40	5 50	6 60	7 70	8 80	11 00	13 20
2 "	20	80	1 20	1 60	2 00	2 40	2 80	3 20	4 00	4 80
2 "	19	90	1 35	1 80	2 25	2 70	3 15	3 60	4 50	5 40
2 "	18	1 15	1 72	2 30	2 87	3 45	4 02	4 60	5 75	6 90
2 "	17	1 50	2 25	3 00	3 75	4 50	5 25	6 00	7 50	9 00
2 "	16	1 87	2 80	3 75	4 68	5 62	6 55	7 50	9 37	11 25
2 "	15	2 60	3 90	5 20	6 50	7 80	9 10	10 40	13 00	15 60
1½	19	1 25	1 87	2 50	3 12	3 75	4 37	5 00	6 25	7 50
1½	18	1 60	2 40	3 20	4 00	4 80	5 60	6 40	8 00	9 60
1¼	19	1 95	2 92	3 90	4 87	5 85	6 82	7 80	9 75	11 70
1 "	20	2 15	3 22	4 30	5 37	6 45	7 52	8 60	10 75	12 90
1 "	19	2 50	3 75	5 00	6 25	7 50	8 75	10 00	12 50	15 00
1 "	18	2 95	4 42	5 90	7 37	8 85	10 32	11 80	14 75	17 70
¾	20	3 20	4 80	6 40	8 00	9 60	11 20	12 80	16 00	19 20
¾	19	3 80	5 70	7 60	9 50	11 40	13 10	15 20	19 00	22 80

Staples for above, ¾ or 1 inch, 10 cts per lb.

We have in stock here most widths of 3-inch No. 18, and 2-inch No. 20, and all the widths of 2-inch No. 19. Any of these may be shipped from here when preferred. These and other sizes will also be shipped from New York or Chicago direct, without any additional charge for cartage. In addition to these low prices we will, on lots of 200 lbs. or more to points east of Ohio and north of Virginia, where the freight does not exceed 40c per 100 lbs., ship direct from the factory in Connecticut, and deliver the goods at your station. To points farther removed from the factory, where it would be more economical to ship from factory we will do so, and allow 40c per 100 lbs. on the freight, on shipments of 200 lbs. or more. It is only on shipments from the Connecticut factory that we can allow the freight. Shipments from New York, Chicago, or from here, will be f. o. b., and freight paid by the purchaser.

If any have our netting catalogue No. 122 they may figure direct from the list price on pages 1, 2, and 3, on less than 5 rolls, 76 per cent; on 5 to 10 rolls, 75 and 10 per cent; on 10 to 20 rolls, 75 and 15 per cent; and on 25 rolls or more, 80 per cent. Note, however, that the list price of 2-inch No. 20 netting is 2¼c per sq. ft., not 2 cents as formerly. If any have not our netting catalogue, and desire it, you may have it for the asking.

WHITE WONDER FOWLS.

Perhaps some of our readers know more about these American White Wonders than I do. We like them so well that we have decided to keep no others; but we find ourselves with eight or ten nice roosters that we do not want, and they seem almost too valuable for the table. The pullets hatched from them in the spring, now laying, I would not sell for less than two or three dollars apiece; but anybody may have the young roosters for $1.50 each. If you were where you could come and see them you might have your pick out of the flock at that price. We have also one rooster about a year and a half old, that was from one of the original setting of eggs sent us by friend W. M. French, New Haven, Vt. We offer this fowl for $2.00. The reason we sell him is because he fights with his brother if we let them loose together. I do not know but this is one great trouble with the White Wonder fowls. When the

males are big enough it is usually war to the death. We will make the usual guarantee that poultry-dealers are in the habit of making on safe delivery.

FREEMAN POTATOES AND MONROE SEEDLINGS.

I presume it will prove to be too late to undertake to send potatoes by freight during the month of December. They can, however, be sent in small quantities by mail or express with safety, so far as our experience goes. Of course, there is danger of freezing them in getting them home from the express or post office. The question has been asked, whether, if they were paid for now, we would keep them until spring. We should be glad to do this under the following conditions: We will weigh them up, 60 lbs. to the bushel, pack them in boxes or barrels, with your address on them all ready to ship, to be sent in the spring at such a time as you may think proper, and at the prices which we have recently given in these pages. So far as our arrangements for keeping them are concerned, I would say that we have a very large and complete cellar under our machine-shop. Potatoes very rarely freeze in this cellar, even when the doors and windows are left open. We have, however, just been doing off an apartment for our potatoes for seed. It is lined with tarred paper overhead, and securely partitioned off from the rest of the cellar, enabling us, by opening the windows nights, to keep the potatoes just as cold as it is safe to keep them. Each window has a shutter, also covered with tarred paper, so that the apartment may be made perfectly dark. By keeping the temperature down near freezing, we feel quite certain that the potatoes will be changed very little if any by spring. They may, however, shrink some—I can not tell from experience how much. You will have to take this shrinkage, and the possibility of an occasional rotten one by spring. As we have never had potatoes rot in wintering, as we manage them, I am willing to guarantee there shall not be more than 10 per cent spoiled. Aside from this they will be at your own risk. Those not sold during winter will be assorted and weighed again in the spring; but after we have wintered them over, and thus sorted them, we shall, of course, be obliged to charge something more for them. The state of the market will have something to do with the price in the spring; but until further notice you may purchase as many as you choose, at prices mentioned on page 802, Nov. 1, and just under the table of contents in our issue for Nov. 15.

The Monroe Seedling, as we have known it, is a rather long potato; in fact, potatoes grown from the seed we sent out last year are long, and some of them a little scraggly; but the potatoes on the 9 acres belonging to Wilbur Fenn are nearly all of a flattened oval, so near like the Freeman potatoes that, were it not for the different color, one might almost take them for Freemans. Now, here is something else that I do not quite understand. The potatoes raised by Terry and those raised by Fenn are smoother and of better shape than most of the potatoes we find raised elsewhere, especially those raised on swampy or mucky ground. This matter has been commented on before. For some time past we have been using Freeman potatoes in our home; but when we gave Mrs. Root a box of the Monroe Seedlings, taken from that carload, imagine my surprise to hear her say she liked them a little better than the Freemans—at least in one respect. She says they do not boil to pieces quite so much. In fact, they come on to the table about as nice and mealy as any potatoes I ever saw. And this reminds me that, before closing this item, I must tell you how Mrs. Root makes even indifferent potatoes dry and mealy to put on the table. I suppose she boils them very much as anybody else does. She always pares them before boiling; but when they are all done (not overdone), the water is quickly poured off; then while they are hot and steaming she gives them a gentle shaking and tossing in order to let as much of the water as possible get out in the form of steam. If you watch the process you will see the potatoes becoming dry and mealy under the treatment, some of them breaking open if they, like the Freemans, are very much disposed that way. If she would take the same potatoes and let them stand in the water they are boiled in, or even put them into a pan and let them stay until they are quite cold, without any shaking, they would be soggy and heavy—"waxy" as we sometimes term it. Perhaps the good woman who presides over your household knows all about this already; but I thought it might do no harm to mention it.

Books by T. B. Terry and Others.

The long winter evenings bring extra time for reading. A part of this time could not be more profitably spent than in reading the following rural hand-books which we send by mail at the uniform price of 40c each. The new edition of the A B C of Potato Culture, rewritten this season by T. B. Terry, will be completed in December. For 10c extra we will send at once a copy of the old edition and the new also when finished.

The A B C of Potato Culture. Paper, 220 pages, 4x5, illustrated. This is T. B. Terry's first and most masterly work. The book has had a large sale, and has been reprinted in foreign languages. The second edition, reset and almost entirely rewritten, is just issued. When we are thoroughly conversant with friend Terry's system of raising potatoes, we shall be ready to handle almost any farm crop successfully. Price 40c, postpaid.

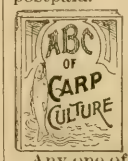
The A B C of Strawberry Culture. Paper, 150 pages, fully illustrated. This is Terry's latest *small* book, and has received some very high words of praise. Who among rural people does not have a little garden-patch? If you would learn to raise in it that most luscious of all fruit, the strawberry, with the best results, you can not be without this little book. Even if you don't grow strawberries you will be the better for reading it.

Tile Drainage. By W. I. Chamberlain. This is a valuable companion to our other rural books. It embraces the experience of forty years of one of our foremost practical agriculturists, who has laid with his own hands over 15 miles of tile. Paper, 150 pages, illustrated. Price 40c, postpaid.

Winter Care of Horses and Cattle. This is friend Terry's second book in regard to farm matters; but it is so intimately connected with his potato book that it reads almost like a sequel to it. If you have only a horse or a cow, I think it will pay you to invest in the book. It has 44 pages, 7x10, illustrated. Price 40c, postpaid.

Maple Sugar and the Sugar-Bush. By A. J. Cook. Paper, 44 pages, 7x10, illustrated. This is most valuable to all who are interested in the product of our sugar maples.. No one who makes maple sugar or syrup should be without it. If you don't make maple syrup you may want to know how it is made, and how to judge of a good article when you buy it. Price 40c, postpaid.

Tomato Culture. In three parts. By J. W. Day, D. Cummins, and A. I. Root. Paper, 150 pages, illustrated. A most valuable treatise embracing field culture, forcing under glass, and raising plants for market. Valuable to any one raising garden stuff of any kind, aside from tomatoes. Price 40c, postpaid.



A B C of Carp Culture. In paper covers, illustrated. This is a work of 70 pages, 7x10, written by Geo. Finley and A. I. Root, and the best authority on the subject of carp culture yet in print. The rearing of carp is a pleasant and profitable amusement. This book will tell you all about it. Price 40c.

Any one of above books sent free for one new subscription with your own renewal and $2.00, the new subscriber to receive GLEANINGS the rest of this year and all of 1894.

Terry's First Large-Sized Book.

We have just received 100 copies of "Our Farming," from Wm. Henry Maule. Price, by mail, postpaid, $2.00. If ordered by express or freight with other goods, you may deduct the postage, 15c.; or we will send the book by mail, postpaid, with GLEANINGS, for $2.50.

Bee-Hives.

Dovetailed or otherwise. All kinds of bee-supplies. Write for free catalogue 23-22db

W. H. PUTNAM, River Falls, Pierce Co., Wis.

FOR SALE.—500 Ferrets, a well-trained bird-dog, Scotch Collie, and Coon dog puppies. Price list free. 4tfdb

N. A. KNAPP,
ROCHESTER, LORAIN CO., O.

TAKE NOTICE!

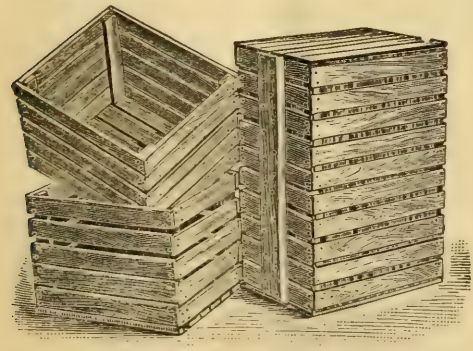
BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE & KEITH,
8tfdb New London, Wis

$5.50 For 3, or $10.00 for 6, Finest Brown Leghorns, or Plymouth Rocks. Other varieties. Circular free. Address GEER BROS., St. Marys, Mo., or H. B. GEER, Nashville, Tenn. 5tfdb

FOR SALE CHEAP.

Improved Barnes buzz-saw, almost new, in good order. Price $20. C. W. VANHOUTEN, Smithfield, Ill.

BUSHEL BOXES.



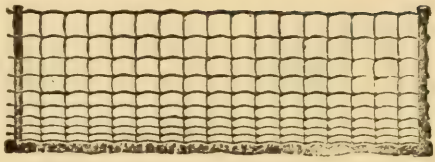
The above cut shows our new-style *all-slatted bushel box*. We have two other styles; one has slatted bottom and sides with solid ends in three pieces called the *slatted bushel box*. The other has solid ends and close bottom and sides, and is bound with galvanized iron and called the *galvanized bound box*. These boxes were devised by T. B. Terry for handling potatoes, for which purpose nothing could be handier. The potatoes are picked up into the boxes in the field and left in them till sold. Other crops, such as cucumbers, tomatoes, and apples are being handled in these same boxes. They are of such a size that two go crosswise in an ordinary wagon-box. Outside measure is 14¼x16⅞x12½ deep, and they hold a bushel of potatoes level full so they can be piled one upon another. The above cut shows two *all-slatted* boxes nailed up, and a bundle of 15 alongside; 13 of the 15 are in the flat, packed inside the other two, and nails of the proper kinds are included. The *slatted* and *galvanized bound* boxes are put up in the same way, except there are only 12 in a package instead of 15. Each package weighs about 85 to 90 lbs.

PRICE LIST.

All-slatted bushel box, per crate of 15..... .. $1 50
Slatted bushel box, per crate of 12..... ..1 50
Galvanized bound bushel box, per crate of 12....2 10

In lots of ten crates, 5 per cent discount will be deducted. Price each, nailed, 15, 18, and 22 cents, respectively. A 20-page pamphlet called Handling Farm Produce, telling all about these boxes, mailed free on application.

A. I. ROOT, Medina, O.



Our Specialties.

Every rod of our fence is made from wire drawn especially for our use, as common soft wire would not hold the coil. There is a **spring** in every foot of fence, instead of one in forty rods. The ties are only one foot apart instead of several feet, as in others.

PAGE WOVEN-WIRE FENCE CO., Adrian, Mich.

☞ In responding to this advertisement mention GLEANINGS

HATCH CHICKENS BY STEAM
WITH THE IMPROVED
EXCELSIOR INCUBATOR.

Thousands in Successful Operation. *SIMPLE, PERFECT, and SELF-REGULATING.* **Guaranteed to hatch a larger percentage of fertile eggs, at less cost, than any other Incubator.** Send 6c. for Illus. Catalog. Circulars Free.

GEO. H. STAHL, Pat. & Sole Mfr., Quincy, Ill.

Please mention GLEANINGS. 21-8db

To Get Acquainted,

We will send the **Bee-keepers' Enterprise** from now until Jan., '95 (16 months), for 50 cts.; or 3 months for 15 cts. You will be pleased with your investment, in either case. 18 17tfdb

Burton L. Sage,
New Haven, = = Conn.

& Box Combined. Runs 8 days, keeps perfect time & furnish constantly all the most charming & popular tunes. Plays anything from a simple song to a difficult waltz or operatic selection. To introduce it, one in every county or town furnished reliable persons (either sex) who will promise to show it. Send at once to

Inventor's Co., New York City, P. O. Box 2252.

Jennie Atchley's

is the place to arrange for your queens for 1894. She will have them ready.

Beeville, Texas.

Cash for Beeswax!

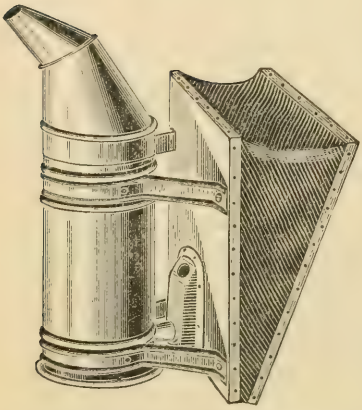
Will pay 21c per lb. cash, or 24c in trade for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 28c per lb., or 30c for *best selected wax*.

Unless you put your name *on the box*, and notify us by mail of amount sent, I can not hold myself responsible for mistakes. It will not pay as a general thing to send wax by *express*.

A. I. ROOT, Medina, Ohio.

The Crane Smoker

Received the Award Honorable at the World's Columbian Exposition, a distinction not accorded to any other.



Smoking Capacity and Strength of Blast Simply Amazing.

The **New Non-Smoke-Sucking Check-Valve,** by which a great blast is secured and the bellows kept clean, is the **DISTINCTIVE** and **VALUABLE** feature alone possessed by the new implement. It would be impossible to tell of all its unique features, and so we say, try it and fall in love with it, as many have already done.

Price, with 3½-inch fire-cup and curved nozzle, by mail, $1 95; by express, $1.60.

If your nearest dealer in supplies does not keep it, write to the authorized manufacturer,

A. I. ROOT, Medina, Ohio.

N. B.—Don't forget that we are headquarters for all kinds of bee-keepers' supplies. Our new 1894 catalogue of 52 pages now ready for mailing.

Sections!

We have just completed several new and expensive automatic machines that will turn out sections that *in point of quality can not be excelled.* They are sanded and polished on both sides, and are of an absolutely uniform thickness from end to end. Samples and prices in quantities on application. Speak quick if you want to lay in a stock of these fine sections, as our stock of lumber is low.

A. I. Root, Medina, Ohio.

Sections!

DOVETAILED HIVES, SIMPLICITY HIVES,

SECTIONS, EXTRACTORS, ETC.

FULL LINE OF

BEE-KEEPERS' SUPPLIES.

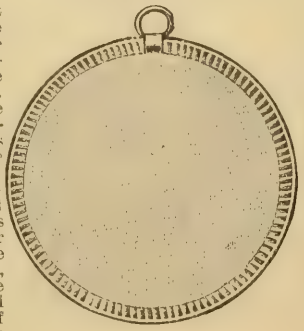
60-PAGE CATALOGUE. ltfdb

J. M. JENKINS, WETUMPKA, ALABAMA.

☞In responding to this advertisement mention GLEANINGS

AUGITE STOVE = MATS.

It is a year last month since we first brought to the notice of our readers this valuable household article. During this time we have distributed about 200 gross of them, and the price has declined from 25 to 10 cents each. We have not been alone in this large sale, for many others have had equal success, and the mats have been pretty well distributed. If there are still any



of our readers who have not tried one of these mats we would say to you that you are depriving the one who does the cooking in your house of one of the greatest helps that she can have. We gave you an opportunity, during October and November, to obtain one of these mats without cost to you by simply renewing, before the time had expired for which you had paid your subscription. We can not keep that offer going indefinitely, and it is no longer good; but if you send an extra 10 cents when you renew we will send you a mat; or if you will send a new subscription with your own renewal and $2.00, we will send you, without charge, two mats, and you can keep both, or give one to the new subscriber, and keep the other; or you may make some one else happy by making him a present of the mat. If you want mats in quantities to sell among your neighbors, we can supply you at $1.00 per dozen; 3 dozen, $2.80; 6 dozen, $5.40; 12 dozen, $10.00. By mail, 60c per dozen extra for postage.

A. I. ROOT, Medina, Ohio.

HONEY COLUMN.

CITY MARKETS.

CHICAGO.—*Honey.*—There is little if any change in the honey market from last quotations. e have not had the usual good December trade in comb, and prices are easier in consequence, with the offerings large. Extracted is without any change. Beeswax dull.
R. A. BURNETT & Co.,
Dec. 8. 161 So. Water St., Chicago, Ill.

KANSAS CITY.—*Honey.*—The market not very active, either for comb or extracted. We quote: No. 1 white, 1-lb. comb, 14@15; No. 2, 13@14; amber, No. 1, 12@14; No. 2, 10@12. Extracted, white, 6½@7; amber, 5@6. Beeswax, 22@23.
CLEMONS, MASON & Co.,
Dec. 12. Kansas City, Mo.

ALBANY.—*Honey.*—Comb honey is selling slow, and clover accumulating, while buckwheat remains scarce. Extracted begins to move more freely; but there is a large stock on the market. We quote:
No 1. clover, 1-lbs., 12@13; No. 11@12; mixed, 10½11; buckwheat, 11@12; extracted, light, 6½@7; dark, 5½@6.
CHAS. MCCULLOCH & Co.,
Dec. 11. 393, 395, 397 Broadway, Albany, N. Y.

BUFFALO.—*Honey.*—There is a trifle more activity in the honey market. Fancy, mostly 14; a few, 15; choice, 12@13; buckwheat, 9@10. Beeswax, 25@30.
BATTERSON & Co.,
Dec. 8. Buffalo, N. Y.

CINCINNATI.—*Honey.*—Demand is good for all kinds of honey in the jobbing way, for family use. There is a slow demand from manufacturers. Extracted honey brings 5@8 on arrival. Comb honey sells for 12@16 in the jobbing way, for best white.
Demand for beeswax is fair, at 20@23 for good to choice yellow.
CHAS. F. MUTH & SON,
Dec. 8. Cincinnati, Ohio.

CLEVELAND.—*Honey.*—Honey is in good demand at 15 for No. 1 white; No. 2 grade, 14. Beeswax, 24@25. Our market is using all the receipts.
WILLIAMS BROS.,
Dec. 8. 80 & 82 Broadway, Cleveland, O.

DETROIT.—*Honey.*—Sales of comb honey continue to be satisfactory, with prices remaining same; viz., 13@15, the latter figures for fancy. Extracted, 7@8. Beeswax, 23@24.
M. H. HUNT,
Dec. 8. Bell Branch, Mich.

ST. LOUIS.—*Honey.*—Honey continues dull, with only an occasional sale of a package. Market is steady at 4@4½ for extracted in barrels; cans, 6½@7; comb is in good supply, and sells slowly at from 10@12. Beeswax, prime, 23.
D. G. TUTT GROCER Co.,
Dec. 9. St. Louis, Mo.

KANSAS CITY.—*Honey.*—Demand only fair, good supply. One pound white, 16; amber, 14; dark, 12; extracted, white, 7; amber, 6; dark, 5. Beeswax, 22@25.
HAMBLIN & BEARSS,
Dec. 8. Kansas City, Mo.

BOSTON.—*Honey.*—Honey continues to sell fairly, but at low prices. Best comb honey sells at 14@15; extracted, 6@7. No beeswax on hand.
BLAKE & RIPLEY,
Dec. 9. Boston, Mass.

ST. PAUL.—*Honey.*—We quote to-day as our actual sales, choice white extracted honey, 6@7; choice amber and light amber, 5½@6½; market steady; demand moderate. Comb honey is very dull, selling at 12½@13½; demand light; market weak, and sales slow. Holders of comb honey appear to be pressing their holdings on the markets.
SMITH & AUSTRIAN,
Dec. 9. St. Paul, Minn.

SAN FRANCISCO.—*Honey.*—Honey quiet, but selling all the time for shipment east. Extracted, white, 5 to 5½; light amber, 4¾ to 5. Beeswax not plentiful, and is in some demand at 23@23½. Comb honey, 9½@11.
SCHACHT, LEMCKE & STEINER,
San Francisco, Cal.

ALBANY.—*Honey.*—Honey market easier on light and mixed grades, and firm on buckwheat; small combs at 11½@12.
H. R. WRIGHT,
Nov. 23. 326, 328, 330 Broadway, Albany, N. Y.

FOR SALE.—4000 lbs. of extracted white-clover and basswood honey; it is No. 1 honey, thoroughly ripened up in hives; it is put in 60-lb. tin cans. I will take 7c delivered on cars here. F. W. HOLMES,
Coopersville, Ottawa Co., Mich.

FOR SALE.—A few tons of white-clover and basswood honey, in strong new barrels, containing about 325 pounds each. Price 7c; in ton lots, 7% off.
FRANK MCNAY, Mauston, Wis.

FOR SALE.—2000 lbs. of fine comb honey, in 1-lb. sections, 24-lb. cases, and 2000 lbs. of clover and basswood honey, in 60-lb. square jacket cans. Sample of extracted honey by mail on application.
EZRA BAER, Dixon, Illinois.

BUFFALO, N. Y. Unsurpassed Honey Market.
BATTERSON & CO. Responsible, Reliable, Commission Merchants. 18tfdb **and Prompt.**

CHAS. ISRAEL & BROS., 110 Hudson St., N. Y.
WHOLESALE DEALERS & COMMISSION MERCHANTS. *Honey & Beeswax.*
Established 1875.

Automatic Comb Foundation Mills. **Made by W. C. Pelham, Maysville, Ky.**

FLORIDA. For sale, 75 hives of bees; inquire of AUG. LEYVRAZ, Francis, Fla. 19tf

Here's the Place
To get *early* Golden Queens. Send for circular and prices.
J. B. CASE,
Port Orange, Fla.

3 pairs of *Pekin Ducks* at $1.50 per pair, and **4** *S. C. White Leghorn Cockerels* at 75c each, if sold before Jan. 1, 1894.
Dr. E. Anderson, Comanche, Tex.

KIND WORDS FROM OUR CUSTOMERS.

GLEANINGS has become almost indispensable in my family. J. T. BEALL.
Ontario, O., Nov. 16.

I get my GLEANINGS regularly; am always glad to get it, as it is so newsy, and there is so much good information to be gained from it.
Dove Park, Ark., Nov. 28. J. W. MORRIS.

I wish to say to you that I am delighted with the sewing-machine which I bought of you in July last. It is just perfection. GLEANINGS has become a necessity in our home. May its editors long live to bless us with its reading. MRS. S. E. PADGETT.
Owego, N. Y., Nov. 27.

Please tell Rambler that I hope he will not get married, for his rambling days would be over, and then what should we do without those interesting articles? We also enjoy very much your wheel experiences. MRS. J. HILTON.
Los Alamos, Cal., Nov. 3.

As I am renewing my subscription for GLEANINGS I would say that I would not do without it as long as I can manage to pay for it. It is just splendid. We like the Home talks and the high-pressure gardening very much; and Rambler too. It is good all through. What has become of Jake Smith?
Niagara Falls, N. Y., Nov. 25. CHAS. KINZIE.
[Jake has been visiting, but will be back soon.]

THE REVIEW FOR 1894.

As the occasion demands, the ***Special Topic*** feature, that of bringing together in one issue the latest views of the best men upon some one topic, will be continued. In the ***Extracted Department*** will be given the most valuable articles to be found in the other journals. ***Hasty*** will continue to give, each month, about three pages of his inimitable "Condensed View of Current Bee Writings." R. L. Taylor will write each month under the head of "***Work at Michigan's Experiment Apiary.***" Next summer, in company with his camera, the editor expects to visit a large number of bee-keepers, making extended trips through Canada, the Eastern, Middle, and Western States; and the ***Review*** will contain ***Illustrations*** and descriptions of the bee-keepers visited, their homes, families, apiaries, implements, methods, etc. The principal ***Correspondents*** are successful, practical men, most of whom have numbered their colonies by the hundred, and sent honey to market by the ton, and who can write, from experience, articles containing information of real benefit to honey-producers. In short, the ***Review*** will strive most earnestly to stand in the ***Front Rank,*** to publish advanced ideas, to be interesting, enterprising, wide awake, up with the times, and of such a character that no practical bee-keeper can afford to do without it. Price $1.00 a year. The ***Review*** and "***Advanced Bee Culture***" (a 70-cent book) for $1.25. New subscribers will receive balance of this year free. Three late but different issues of the ***Review*** for 10 cents.

W. Z. HUTCHINSON, Flint, Mich.

Doolittle's Queen-Rearing Free.

We have some of G. M. Doolittle's "Scientific Queen-Rearing" books (170 pages) in paper covers, a copy of which we will mail **FREE** to the new subscriber who sends us $1.00 for the **Weekly "AMERICAN BEE JOURNAL"** for one year. This same book in cloth binding sells for $1.00, but we give to a New Subscriber one of the paper-bound edition for **nothing.** Order quick, if you want one. They will all soon be gone. A sample copy of the "Bee Journal" is sent free on application to the publishers.

Address, **GEO. W. YORK & CO., 56 Fifth Ave., CHICAGO, ILL.**

To New Subscribers, the remainder of this year will be sent free.

PORTER BEE ESCAPES are used and pronounced a great labor-saving implement by **Chas. Dadant & Son, Prof. A. J. Cook, Chas. F. Muth, Jno. S. Reese, J. H. Martin, John Andrews, F. A. Gemmell, Wm. McEvoy, A. F. Brown, Thomas Pierce,** and many other prominent bee-keepers. Descriptive circular and testimonials mailed free. **PRICES:**—Each, post-paid, with directions, 20c.; per doz., $2.25. *Return them and get your money back after trial if not satisfied.* For sale by dealers. Address **R. & E. C. PORTER LEWISTOWN, ILL.**

PATENT WIRED COMB FOUNDATION

Has No Sag in Brood-frames.

Thin Flat-Bottom Foundation

Has no Fishbone in the Surplus Honey.

Being the cleanest, it is usually worked the quickest of any foundation made.

J. VAN DEUSEN & SONS,

12tfdb **Sole Manufacturers, Sprout Brook, Montgomery Co., N. Y.**

MUTH'S HONEY EXTRACTOR.

Square Glass Honey Jars, Tin Buckets, Bee-hives, Honey Sections, Etc., Etc. Perfection Cold-blast Smokers.

APPLY TO

CHAS. F. MUTH & SON, Cincinnati, O.

P. S.—Send 10-ct. stamp for "Practical Hints to Bee-keepers."

BIG DISCOUNT on Foundation and Sections. Thin foundation, 50 cts. per lb.; brood, 40 cts. No. 1 sections, $2.75 per M. Every thing cheap, price list free. E. H. TRUMPER, Bankers, Mich.

BBB'S! If you keep ***BEES,*** subscribe for the **Progressive Bee-keeper,** a journal devoted to Bees, Honey, and kindred industries. ***50 cts. per year.*** Sample copy, also a beautifully illustrated catalogue of Bee-keepers' supplies, FREE. Address

LEAHY MFG. CO., HIGGINSVILLE, MO.

Notice to Jobbers

G. B. Lewis Co., Watertown, Wis.,

Invite all Wholesalers and Jobbers of Bee-Keepers' Supplies to write them for contracts for Hives and Sections the coming season. . . .

1tfdb **Please mention this paper.**

☞ In responding to this advertisement mention GLEANINGS.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
PUBLISHED BY A. I. ROOT
$1.00 PER YEAR MEDINA OHIO

Vol. XXI. DEC. 15, 1893. No. 24.

STRAY STRAWS

FROM DR. C. C. MILLER.

WHEW! What a winter at its front end!

ALL RIGHT, friend Root; bring on your report of sections manufactured, and I promise to keep mum.

MICHIGAN isn't so very near Marengo, and yet I feel sort o' lonesome when I think Prof. Cook is no longer in it.

WOMEN occupy one-fourth the space in the list of names of members of the Chicago convention. They were a nice lot too.

THAT ACCOUNT on p. 894 is another proof that the whole tramp business should be summarily stopped. Wouldn't it be a kindness to the tramps?

WILL BOTTOM-BARS ⅜ square allow building down on top-bars if the top-bars under them are spaced ¼ apart? See F. X. Arnold's complaint, p. 890.

A DRESSING for cuts, sores, scalds, etc. Boil together one pound of resin and three ounces of clarified beef suet; then add two ounces of beeswax, boil one-half hour longer, and allow to cool.—*Medical Brief.*

THERE YOU GO again, Bro. Root, butting your head, on p. 896, against that time-honored belief that night air is pernicious. No, no! Never breathe night air. Always bottle up some day air and take to bed with you.

"TWENTY YEARS AGO we used to hear things preached from the pulpit that we do not hear now—at least *I* do not hear them now."—A. I. Root, p. 892. Bro. Root, don't you think you heard a little differently twenty years ago?

YOU'RE RIGHT, Ernest, on page 900. "Mr. Boardman is a very careful bee-keeper,"—one of our best men; but for every one that gives his testimony in favor of swarming, are there not three to say they would get more honey if the bees never thought of swarming?

FRIEND ABBOTT, I'll never again write any thing but Saint Joseph—if I don't forget. But if calling your city St. Jo brought out such a flaming advertisement on p. 891, what would it have done if I had called it St. J.? I'm looking forward to a good convention at St. Joe—seph.

A NEW KINK in hauling bees is given by Mrs. Atchley, in *A. B. J.* It's a wire-cloth house on a wagon. Put in the bees in box hives upside down, without at all confining them in the hives, and after driving 40 miles scarcely any bees are found flying about in the bee-tight house.

"NON-SWARMING . . . . means, in most cases, little or no honey." That statement, in a foot-note on p. 889, needs a little qualifying, doesn't it, friend Root? In most cases, doesn't the colony that never offers to swarm, store the most honey? The right sort of prevention may yet be found.

CANADA SOIL doesn't seem as favorable for the production of new bee-journals as that farther south. Now, however, a second candidate appears, bearing the strong name, *Practical Bee-keeper.* It starts out in good shape, and is the highest-priced paper published, 10 cents per copy.

SKUNKS are thus killed by Mrs. Atchley (*A. B. J.*): Make a little hole in the small end of an egg, put in some poison, and the skunk that sucks that egg will never suck another. Don't put the poison in the large end, for there is an air-hole there, and the poison will not be mixed in the egg.

THE APICULTURIST advises to raise hives from the cellar bottom so as to keep mice out. But mice can climb, unless the hives are suspended from above, and that would be difficult with a hundred hives. Fasten the mice out with wire cloth three meshes to the inch, and then poison and trap besides.

YOUNG BEES that have not yet marked their location are more likely to be on the brood-combs than in the super, friend Root. So the trouble you anticipate in your foot-note, p. 883, is not likely to occur. At any rate, I never find lost bees hanging around piles of supers with any kind of escapes on.

A CRUSADE against foot-ball as now conducted is opened up by such respectable papers as the *Medical News*, *Harper's Weekly*, the New York *Herald*, and the New York *Evening Post.* Twenty-six deaths so far this season in England, directly attributable to foot-ball injuries, and four or five in this country.

JAMES HEDDON puts himself on record in *Practical Bee-keeper* as favoring a top-bar ⅝ or ¾ deep and ⅞ wide. He thinks ⅜ space between top-bars best, and thinks ½ space will have less brace-combs than ¼. He says bees will plug a ¼ space, a thing I've been afraid of; but my bees didn't do it in the single season's trial.

"A LAYING QUEEN never leaves the hive except at swarming time," is the rule. Three different men report exceptions in *Bienen Vater.* In one case the queen was absent 18 minutes, and eggs and brood in all stages were present. One man thinks there is reason to believe that these flights had occurred several times before, and the editor thinks harm might be done in such cases by having a trap on.

EVERY BICYCLER seems inclined to double himself up like a capital C. The eminent English physician, Sir Benjamin Richardson, himself an enthusiastic rider, says: "The attitude

that nearly all cyclists adopt, to a greater or less degree—bending forward over the handles of their machines—is undoubtedly unhealthy." The spine and chest-bone are affected, circulation impaired, and lungs interfered with.

Adulteration of beeswax, according to a German writer, may be detected by the use of benzine. Pour benzine over beeswax in a test tube; and if the wax is pure, at the end of an hour or two there will be in the tube two strata, a lower, uniform stratum of wax, and an upper stratum of clear benzine. If impurities are present, the time of separation is longer, taking half a day or several days, and the stratum of wax is not uniform in character.

THE BASE OF FOUNDATION.

HOW MUCH THE BEES HAVE TO THIN IT DOWN; SOME INTERESTING AND VALUABLE EXPERIMENTS BY R. L. TAYLOR.

In my experience as a bee-keeper I have made use of a large variety of foundations distinguished by weight, character of wax, name of the manufacturer, and character of machine used. For some of these, large (not to say extravagant) claims were made. As these claims related to points that went to the relative profit of particular kinds, I was naturally curious to observe whether these claims were sustained by the decision of the bees—the court of last resort in such matters. My methods of observation, to be sure, were not very scientific or exact, as a general thing, but they were sufficient to produce in my mind a general feeling of incredulity touching such claims, since nothing appeared to indicate that they were other than theoretical; and I rested in the hope that an opportunity would come to take an appeal.

The opportunity came unexpectedly, and the old questions revived: Is all foundation equally good? Does the character of the machine employed in its manufacture affect its quality? Is there any preferable method of manipulating wax to be used for foundation? Is comb made from extra thin foundation lighter in weight than that made from thin? Does age injuriously affect it? What is the truth about the "fishbone"? These were some of them. The time at my disposal was short, but I determined to make an effort to let in some pioneer ray of light upon this matter which seemed to me to lie altogether in darkness.

For the purpose of the experiment I selected eight sorts of foundation, each of which I designated by a letter of the alphabet. This, together with the description of each, will sufficiently appear from the following tabulation of the kinds selected:

A, Dadant's thin	10	ft. to the lb.
B, Dadant's extra thin	12	" "
C, Van Deusen's flat-bottom, obtained of A. I. Root	13¾	" "
D, Root's thin	10.31	" "
E, Root's extra thin	12.03	" "
F, Given press	10.09	" "
G, " "	9.37	" "
H, " " 3 years old, about	9	" "

The plan included an attempt to determine what foundations the bees worked the soonest and the most rapidly; but we will now consider only the question of the thinness of the septum.

After maturely considering the matter it appeared to me that there were two ways in which this could be determined with a reasonable degree of certainty; viz., by weighing and by measuring.

By a process which seemed to me to secure substantial accuracy, but which I will not take time to describe now, I cut down a set of section combs made from the foundations already mentioned, from which the honey had been thoroughly washed, to an even thickness of something less than half an inch, leaving the septum undisturbed in each, from each of which, with a sort of cake-cutter, I carefully cut a "cake" something more than two and a half inches in diameter. These were the samples for the weighing test.

While at Chicago at the convention, in talking with Mr. E. R. Root about the matter of measuring the thickness of the bases of the cells, he informed me that there was a micrometer at his establishment, and that he would be glad to put it at my service. I accordingly gave him a set of the *septa*, each labeled with its proper alphabetical designation only, of which he had measurements taken by Mr. C. C. Washburn, the person accustomed to use the instrument. I was also favored with measurements of the bases of the several kinds of foundation made by A. I. Root. These measurements were sent me, and appear further on.

The two sets mentioned were the only ones finally made use of. They were taken from two separate cases of honey, all of one set, from one case, and all of the other from the other.

As the natural comb was the only proper standard of comparison, I added a sample of that to each set, and designated it by the letter "I."

After taking the first set to the Agricultural College, and having it weighed by Mr. Frank S. Kedzie, Adjunct Professor of Chemistry, I divided each sample into two, making two sets. The thickness of the bases of one set I had measured by Dr. Beal, Professor of Botany, etc., and the other set I sent to Mr. E. R. Root, so as to secure from two persons measurements of practically the same piece of comb. On account of the illness of Mr. Washburn, the measurements of the latter set were taken by a substitute, Mr. H. A. Hubbell.

As will appear from the tables in the case of Mr. Hubbell, the samples were measured from once to five times; in the other cases, each was measured three times at as many different points.

The measurements are given in ten-thousandths of an inch, and are as follows:

WASHBURN'S MEASUREMENTS.

	A	B	C	D	E	F	G	H	I
	95	86.6	85	76	86	96	73	66	57
	125	90	83	110	105	70	75	90	57
	95	85	93	96	92	75	75	82	57
Total.....	315	261.6	261	282	283	241	223	238	171
Average...	105	87.2	87	94	94	80	74	79	57

DR. BEAL'S MEASUREMENTS.

	A	B	C	D	E	F	G	H	I
	70	110	65	120	70	60	60	80	50
	100	65	70	100	100	60	60	60	50
	80	100	70	80	90	80	60	60	50
Total.....	250	275	205	300	260	200	180	200	150
Average.....	83	92	68	100	87	67	60	67	50

HUBBELL'S MEASUREMENTS.

	A	B	C	D	E	F	G	H	I
	95	80	625	75	70	62.5	50	65	50
		110	675				90	75	75
		90							
		95							
		70							
Total.....		445	1300				140	140	125
Average.....	95	89	65	75	70	62 5	70	70	62 5

GENERAL AVERAGE.

	A	B	C	D	E	F	G	H	I
Washb'n's.	105	87	87	94	94	80	74	79	57
Beal's.....	83	92	68	100	87	67	60	67	50
Hubbell's..	95	89	65	75	70	62.5	70	70	62.5
Total.....	283	268	220	269	251	209.5	204	216	169.5
Gen'l Av'e	94.3	89.3	73.3	89.7	83.7	69.8	68	72	56.5

The result of the weighing, expressed in grams, was as follows:

A	B	C	D	E	F	G	H	I
1.93	2.2398	2.093	2.2349	1.9664	1.8482	1.8886	2.083	1.6321

If any one has a desire to see how these weights would look in grains, he can gratify it by multiplying each amount by 15.432, the number of grains in a gram.

In this connection I shall give the results obtained from the measurements of the thickness of the bases of the several kinds of foundation made by A. I. Root. They will at least serve to show in a measure how little the thickness of the septum as it leaves the machine has to do with its thickness after the bees manipulate it. They are as follows, two measurements of each being shown:

	Heavy.	Medium.	Light L.	Thin.	Extra Thin.
	365	310	198	160	130
	233	240	210	135	122
Total.	598	550	408	295	252
Aver.	299	275	204	147.5	126

I have been greatly gratified at the general uniformity of the measurements as shown, and the substantial agreement therewith of the results of the weighing. Of course, since it is clearly shown that the septum of a small piece of comb made from foundation varies greatly in thickness at different points, any thing like exact agreement in the figures could not be looked for. The gratification arises, not from any thing here shown with regard to the relative value of the foundations used in the experiment, but because we seem to have at hand a sure method of determining the value of any new method of manipulating wax and making foundation. Some parts of some specimens measured were nearly if not quite equal in thinness to that of the natural comb. This seems to me to be a promise that *all* foundation can, by a little patient investigation, be so made that comb made from it will almost if not quite equal the natural comb. What man has done, man can do. We have not alone the fear of the "fishbone" to prompt us to this work. What an enormous amount of wax is wasted in that foundation whose septum the bees will reduce to but ten one-thousandths of an inch, if it might have been made so that they would reduce the septum to five one-thousandths of an inch! Or, put it in another way: If foundation whose septum the bees would reduce to nine one-thousandths of an inch is worth 60 cts. per lb., how much is that worth whose septum the bees would reduce to six one-thousandths of an inch? Numerous other questions will be suggested to the thoughtful mind. Thus, many will ask, "Does the thinness of the comb depend upon the character of the machine from which the foundation came, or does the method of preparing the wax for the machine determine the matter? These and similar questions, with a little co-operation on the part of manufacturers, can now be readily settled.

The tables, it appears to me, are extremely interesting and suggestive, and it is to be hoped that our ablest apiarist will study them exhaustively, to the end that they may be used to the utmost advantage in making further investigations.

In conclusion, I shall state some of the most obvious conclusions to be drawn from the tables as they stand:

1. Age is no disadvantage to foundation. Thus, comb made from H foundation three years old is excelled by only two specimens, and that so slightly that it may be accounted for by the extra weight of H.

2. If the object is to produce lightness of comb, there is little advantage in thinness of foundation, there being only a slight advantage in the case of E over D, and a doubtful advantage of B over A, while F and G have about a "stand off."

3. Without regard to extra weight of foundation, comb made from foundation from the Given press is the lightest in weight.

4. In some cases, comb from foundation closely approaches in lightness the natural comb, but hardly equals it.

5. The thinner the bees work the septum, the less is the variation in it at different points.

Lapeer, Mich., Dec. 4. R. L. TAYLOR.

INSECTS AND FLOWERS.

AGENCY OF THE BEES IN CARRYING POLLEN.

Picking up a paper lately which treats of plants and flowers, I found these words: "Pollen is borne from flower to flower on the breeze as well as on the bodies of insects; in fact, tha seems to be nature's prime method of conveying the fertilizing germs from the anthers of the staminate to the pointals of the pistillate blossoms." In another place in the same paper I find this: "Honey is a vegetable production, appearing in greater or less quantities in every flower that nods to the breeze, or kisses the bright sunlight. It is secreted in the flowers for the purpose of attracting insects, thus securing the complete fertilization of the female blossoms."

Now, while both of the above are true in the main, yet, when applied to certain plants and trees, they are *not* true; neither is it true that "every flower that nods to the breeze" secretes honey. There are some points in this matter which either I or other writers fail to understand; and as it has a direct bearing on our beloved pursuit (bee-keeping), perhaps a short article to draw others out, so that more light may be obtained, will not be amiss.

I understand that the first purpose for which the honey-bee was created was for the fertilization of flowers, while the storage of honey was only for the preservation of the life of the bee, so that the perpetuation of the species might continue for this purpose (fertilization of plants); that man, after a period of time, found that honey was good to eat, and thus utilized the product secreted by the flowers and stored by the bee by making it his food, while the bees perished from such colonies as were robbed by man; that, as the years went by, man learned that the bees would store more honey than their wants required, so surplus apartments were furnished the bees, which were removed when filled, thus leaving enough in the hive, or home of the bee, to supply all its needs; and that from this *surplus* came the honey of commerce and our industry of bee-keeping as we now enjoy it. If I am correct in the above (and I believe I am), the people of the world have the bee-keepers to thank for bringing the bee from its primeval home (the hollow tree, especially as our forests are fast becoming obliterated by the advance of civilization), and

scattering it broadcast throughout the land, to fertilize the millions of flowers which otherwise would produce no fruit. But, to return to the two paragraphs quoted.

While I believe the bees were created for the fertilization of flowers, yet I also believe that not half of the different species of plants and trees require the aid of the bee to fertilize their flowers, and that only those which require the aid of the bee secrete any honey; hence, I said that it was *not* true that every flower "that nods to the breeze or kisses the bright sunlight" secreted honey. In this we see the wisdom of the Creator—bees created to fertilize flowers which could not be fertilized in any other way, and honey placed in these flowers to attract the bees to them. Thus we have the clovers among grasses secreting honey, while the timothy, orchard, red-top, and other grasses do not secrete honey, for they are fertilized by the "breeze." All the fault I have to find with the first quotation is, that it is represented that both the breeze and bees may be needed to fertilize the same and all plants; while I believe that plants and trees which can be fertilized by the breeze do not need the aid of the bees; and that those requiring the aid of the bees *can not possibly* be fertilized by all the breezes that ever blew. To be sure, bees sometimes collect pollen from many flowers which do not require their aid; but, as I said before, honey is secreted only by those which do. Take the flower of the squash, for instance: Gregory, who is certainly good authority, in his excellent treatise on this plant tells us that squashes can be fertilized only by the aid of bees and insects, and proves the same by giving experiments tried, where fine netting was placed over the female flowers on certain hills, when not one of the flowers thus treated produced a squash, while the hills not so treated gave a good crop. Any one looking at a squash-flower will at once come to the conclusion that it is impossible for the wind to carry the pollen from one blossom to another; hence we find it secreting honey to attract the bees. Prominent among this class of flowers which needs the bees to fertilize them, we have the clovers, fruit-trees of nearly all classes, basswood (linden) trees, buckwheat, and fall flowers quite generally. Of the class that does not need the aid of the bee, I will mention grasses of all kinds growing in this locality (except clover); grains of all kinds (except buckwheat); and most of the trees of the forest, such as beech, birch, ash, hemlock, etc. With the grain I would include corn. I know that some writers tell us that bees gather honey from corn; but after a careful watch for over a score of years I have failed to find a single bee having any honey in its honey-sac while at work gathering pollen from corn-tassels. If the stalks are bruised or cut in any way, sometimes there is a sweet substance that exudes which the bees gather, but this can not be properly called the secretion of nectar.

In the above I have given my views regarding this matter, and stand ready to be corrected by any one who can show that I am wrong. I am no botanist, therefore can not give a scientific article on the subject; but if there are any good botanists among the readers of Gleanings, I (and I think all of its readers) should be pleased to hear from them on the subject. Knowledge along this line will help us to disarm the many jealous ones about us who seem to think the bees are injuring them by taking honey from the flowers. Let us keep it ever before the public, that the bees are not only the bee-keeper's friend, but the *especial friend* of the farmer and fruit-grower. Thus doing, many of the troubles of the past will be saved.

Borodino, N. Y. G. M. Doolittle.

PULLED QUEENS.

DR. MILLER TELLS ALL ABOUT THEM.

One of the bee-journals for which I have a real respect asks for a "rest" on pulled queens. Why? If it has tried them and found out that there is any harm in using them, would it not be a better way to tell the harm in the case? Certainly there has not been such a great deal said about them; but enough has been said against them to show that most if not all of those who say any thing against them have never tried them and don't know what they are talking about, merely giving speculative opinions. Those who have tried them will no doubt enjoy a quiet smile on being gravely informed in one of the bee-journals that it is said that "pulled queens are very short-lived, and that but few of them ever become fertile on account of having their wings destroyed by *pulling* the queen from her cell before being properly matured." Elsewhere the suggestion is made that it would be better to use queen-cells, thus letting the queens come out at their own time; and one man goes so far as to say that, instead of pulling queens, he puts wax over the spot in the cell that has been gnawed by the queen so as to hold her prisoner in the cell a longer time, thus making her stronger.

I will try to be magnanimous enough not to oblige any one to use pulled queens who does not want to; but as I have found no little advantage and convenience in their use myself, I will try to clear up some misunderstandings that seem to prevail.

When a queen is raised at any time in a colony where there is no intention of swarming, I think it will be found that the queen emerges from her cell too young and tender to fly, and quite light-colored. I can hardly believe, however, that nature is making any mistake in the case, and I do not believe that she would be any the better queen for longer confinement in the cell. In other words, I think she will mature as well out of the cell as in it. At least the bees seem to think so, and govern themselves accordingly.

If swarming is contemplated, a number of queen-cells being built, one queen is allowed to emerge, and the rest are held in their cells. One or several of them will be thus confined a day or more, the free queen piping and the others quahking. They are not confined in the cells because they are any better for it, but because the exigencies of the case require it.

Now, suppose we go to a hive containing these queens in cells. Take out a frame and find a queen-cell. Looking close, you may see a little slit gnawed by the queen, passing part way round the cell near the smaller end. Through that slit the workers feed her during her imprisonment; and, when allowed by them, she will enlarge the slit and push open the cap.

But you may not see any such slit. If you don't, I know of no way of telling whether the queen is matured enough to emerge, or too immature to emerge for several days. Pull the cell and see. That doesn't mean that, by some means, you are to get hold of the queen's wings and pull on them till you get her out of the cell. It's the cell rather than the queen that is to be pulled. Take hold of the cell and pull it off. A bee-keeper of any experience will readily do that without injuring the queen, and so, probably, would one without experience. All that's necessary is simply to grasp the cell tight enough to pull it off, but not tight enough to mash it.

The probability is, that, in pulling it off, you did it in such a way that it left the base of the cell entirely open. In that case the queen will

back out in a little while, providing she is mature enough, although she may persist in gnawing open the cell in the regular way, and coming out head foremost. If she is old enough, the cap has been already gnawed off, all but a little hinge, and she will promptly push her way through.

You may, however, find her at any stage of immaturity, down to the grub. If too immature for use, all you have to do is to throw away the cell and try another. At swarming time, queen-cells are so plentiful as to be of little account. If, however, you think the cells sufficiently valuable, and don't wish to destroy any, don't take any except such as show the queen gnawing her way out, and leave the others to ripen. With the point of a penknife, scrape over the place where the queen may be expected to gnaw through; and, if the cell is ripe enough, the knife-point will push its way through, and you will easily pull off the cap and allow her ladyship to emerge. If the cell is not ripe enough, there is little danger of the knife pushing its way through.

If the queen is strong enough to cling to the side of a comb, and walk over it without falling off, she is probably mature enough to be good. But you can easily decide whether she is mature enough by putting her in the hive where you want her accepted. If she is not mature enough the bees will promptly seize her and cast her out; but if she is mature enough they will pay little attention to her.

If you have a case where it is difficult to introduce a queen, and have one that is barely mature enough to be received, and another that has been imprisoned in its cell two or three days by the bees, I think you will find the bees more likely to accept the younger one.

Now, where's the advantage of giving a pulled queen, over giving queen-cells? I'll try to tell you some of the advantages. You are not dealing with a pig in a poke, but know what you are doing. If you give a cell, you are not sure what is in it, if, indeed, you're sure there's any thing in it; for, sometimes after a queen emerges, the bees close up the cell so it has all the appearance of having a queen in it. I've seen many a cell with a dead queen in it, but looking all right. It takes less time to put in a queen than a cell. Bees will sometimes destroy a cell when a princess of the right age would not be molested. The cell may have in it a queen with defective wings, or it may be objectionable in other respects; but in giving a pulled queen you need not give any except one whose appearance suits you in all respects.

On the other hand, I don't know of a single advantage a queen-cell has over a pulled queen. Do you? C. C. MILLER.

Marengo, Ill.

[There are a good many facts regarding pulled queens explained above that are new to us. If the doctor explained it before, we did not know it. It will pay every bee-keeper to carefully read this.]

THOSE OLD BEE-BOOKS.

MORE ABOUT HUISH AND HUBER.

A further perusal of Huish vs. Huber constrains me to make what might be called a comparative statement of the claims of each of these great men in the leading points in apiculture. But it must be borne in mind that the statement of Huber is what Huish makes him say; and I fear his prejudice has often misrepresented the blind old man, and even rendered its owner more blind mentally than Huber was literally. Huber, according to Huish, maintains there are eight kinds of bees; viz.:

1. The queen, who lays certain kinds of eggs; 2. The drones, one of which is sufficient to fecundate a queen during the whole of her life; 3. The common bees, who are females, having ovaria, and laying eggs, from which males only spring; which males, however, are never seen; 4. Wax-makers, from whose body the wax exudes; 5. Wax-workers, who make no wax, but who nevertheless construct the cells; 6. Royal-jelly makers, who fabricate an extraordinary liquid, wherewith a queen is generated whenever one is wanted; 7. Nurse-bees, whose office it is to attend upon the brood; 8. Black bees, who are born only to be starved to death.

Now, I can not make out that Huber says all that in just those words. He shows quite clearly that bees at a certain age and under some conditions do so and so; but he does not maintain that a young bee is a "kind of bee" in the sense that a drone is a kind, or that a worker or queen is. Let me put it this way: The people in a certain community work at eight different trades—that is Huber's proposition. Huish concludes from this that eight radically different kinds of human beings are employed, which does not follow. Huber tries to show that the economy of the hive may be divided into eight branches; one of these branches is monopolized by the drones, one by the queen, and six by workers of varying age. I think that will reconcile the two men.

Huish says, "The bees never allow more than one queen in a hive."

Huber says, "The bees sometimes allow two queens in a hive, a big one and a little one; the latter only laying the eggs of males—allowed by Kirkby, and acquiesced in by Rennie."

In ordinary conditions, bees certainly manage to worry along with one queen; but that two are occasionally found together shows that Mr. Huish, F. Z. S., was wrong for once. Has it been demonstrated, however, that two queens in a hive do exactly the same kind of work? Doesn't one of them act as a "sub," and do chores?

Huber says, "The queen oviposits at all seasons of the year, and even in winter."

Huish retorts, "The queen oviposits only in the spring and summer, and *never* in the winter."

Evidently, here is a case where the writers speak from their own experience, and where that great makeshift *locality* must come in to unravel the mystery. What Huish meant by "winter" was something Huber had probably never experienced. Although it is hardly more than an hour's ride from England to France, the transition in climate is remarkable. France is one of the most pleasant, beautiful, and sunny lands in the world, while the climate of England is very changeable, rainy, and foggy, with violent cold in winter. The word "winter," as used by the two men, is a relative term. If they had spoken of a stated temperature and the same degree of moisture, with the same prevailing winds, their experiences would have been about the same.

Huber says that it is the mother queen that departs with the first swarm, while Huish says positively it is the young queen. Probably Huish had in mind a bride leaving home to start a new one, leaving her mother behind; but in this case, Robert, the old homestead is deeded to the bride, while the old lady "goes back to York State." I rather think the "popular prejudice," as Dickens calls it, will side with Huber, regardless of locality.

Huber maintains that queens meet the drones in the air, mate by actual contact, the drone losing the characteristic feature, and dying. No fact in this world is better attested than

that. It has been altogether removed from the realm of doubt and mystery as much as it has been in regard to rearing horses and cattle; and yet Mr. Huish says, "The queen is not fecundated by any act of coition with the drone." That is one of the most astounding errors I have ever known so erudite a man as Huish to commit.

Huber says, "A swarm is not accompanied by any drones."

Huish says, "A swarm has never less than two or three hundred drones."

I think we shall have to side with Huish here, for positive evidence is on his side. It seems presumably true that some drones would go with a new swarm, as their presence might be necessary.

Huber claims that the maximum of young queens hatched in a hive in one season is 27; Huish says 7. Some writers claim more than 7, but probably Huber's estimate is none too large.

Huber claims that bees travel half a mile for food, while Huish says they go five or six miles. We know that bees have been known to go six miles, but it is very seldom, and certainly unprofitable to go so far. The fact is, they will go till they "get there."

Huber says that extra queens are killed by each other in single combat, while Huish claims that the workers do that exclusively. Both may be right, but it is well known that a queen shows more hostility to a rival than a common bee would toward the same queen.

Huber says some colonies throw off seven or eight swarms and yet winter well. Huish says, "No hive was ever yet known to throw off seven swarms."

Huber says, "Food of various kinds is administered to the larvæ according to their ages." Huish says, "No kind of food is administered to the larvæ in the cells." Certainly Huish was wrong.

Huber claims that wax is made from honey or sugar, imbibed by the workers, from whose bodies it exudes in scales between the rings of the abdomen. Huish says, "Wax is made from an elaboration of the pollen of flowers in the second stomach of the bee." Huber is doubtless right.

Huber claims that queens use their sting to kill young queens in their cells, while Huish maintains that queens never sting on any occasion whatever. It seems strange that God should make so important an organ for nothing. But we know they do sting a rival.

I deem it useless to make any further comparison of the opinions of these two writers, as all the points they discussed are now settled to our complete satisfaction, sometimes favorable to Huber, sometimes to Huish, and sometimes to neither.

Huish gives a very interesting chapter on the treatment of honey. The extractor was not then known, and honey was strained through a sieve. He says:

> The French impart a peculiar flavor to their honey by placing orange-flowers and other aromatic herbs in the sieve through which the honey passes. This artificial flavor is supposed by many to proceed from the peculiar kind of flowers from which the bees extract their honey; and in the great honey districts of Narbonne and Languedoc, the honey has always an artificial flavor imparted to it, which enhances its value in the market.

That seems like a "harmless improvement," but it is doubtful whether it is now much in vogue.

Probably no person in the world is so much afraid of being swindled as John Bull. On account of some crooked operations in honey, under the management of one Hoge, some 15 years ago, the English placed a practical boycott on American honey, and have deprived themselves largely, in consequence, of the best the world affords in that line. In the London market the most unwarrantable prejudice prevails against American honey. It certainly is to be regretted that so many standard articles of food can be and are mixed with stuff of different kinds to cheapen them; but the English, in spite of their pains, eat a good deal of "truck" they never intend to. Huish speaks of the condition of honey in London in his day as follows:

> There are few articles in trade which are more adulterated than honey; and the article which is sold in the London shops, under the name of prime honey, bears little or no affinity with the real nature of that article. As it is generally sold by weight, the cottagers take care in the first instance that the honey shall not pass into the hands of the wholesale dealers without receiving its due proportion of flour or other heavy farinaceous substances, which in a short time places the honey into a state of fermentation, and divests it of a great portion of its natural sweetness. A second adulteration takes place when it comes into the hands of the retail dealer, and thus the native virtues of the article are completely destroyed. The detection of the admixture of flour with honey is very easy. Dilute a little honey with cold water; and if it be adulterated with flour, the water will become of a milky hue. Another method is to clarify the honey, by placing a small quantity in a jar, which must be half immersed in a saucepan of water. When the water is brought to a boiling heat, the honey becomes perfectly liquid and clarified; but if adulterated, a thick scum rises to the top, which, on being taken off and suffered to grow cold, crumbles into a farinaceous dust.

The "cottager" alluded to above corresponds to "the honest old farmer" of this country. Some country editor, not noted for his temperance proclivities, once made an editorial note, saying, "For the effects of intemperance, see our inside this week." Doubtless the average Londoner would like to examine himself the same way after eating some "shop" honey made by the good yeomanry of the North country. Quite likely, however, that fraud has been stopped before now.

In spite of what we now regard as wild assertion on the part of Huish in some respects, his book is very readable on account of the writer's spicy English and its remarkably nice print.

Medina, Dec. 8. W. P. Root.

BEES ON A RAMPAGE.

THEY STUNG EVERY THING ON THE FARM; WAS IT A CASE OF ROBBING?

Friend Root:—I am inclined to think there are times in the life of every bee-keeper when he wishes he had never seen nor heard of a bee, no matter how enthusiastic he or she is or ever was. Such were my thoughts and experience late one evening during the latter part of last August. The fuss began near sundown. Had it been earlier in the day, I really do not know what would have become of us all. It seemed as though all of my 50 colonies went on a rampage all of a sudden, which vexed me so I felt that, if it were in my power, I should like to kick the whole outfit clear across the continent into the middle of the Pacific Ocean, so furious were my little pets. The strife and havoc were terrific while the trouble lasted. The first intimation I had of the fuss, I was quietly cutting some weeds from under a clump of rosebushes that grew on the lawn, when, all at once, about half a dozen bees stung me in the face and on the back of the neck. It struck me at once that I had cut into a swarm that had settled there. The bees kept popping it to me as I broke to the house for a veil. Then I heard my little boy, 12 years old, cry out, "The bees are stinging!"

Grandpa, who was in the barn lot pumping water for the stock, was told to run or they would sting him to death. I got a bee-veil, and my wife grabbed several pieces of old carpet off the fence. Grandpa was down, all covered with bees. We got him up, and all hands made a dive and got into the barn. I peeped out from my hiding-place, and saw the cows running wild for the pasture, with their tails high up in the air. The horses were running, stamping, biting, and kicking, all at the same time. Pigs were squealing, running, and twisting their bodies in all shapes. Our old tomcat ran into the barn, with his tail as large as a rolling-pin, while the dog ran off the place. The chickens and turkeys came in for their share, and such a scattering and squalling were never seen or heard before. Several half-grown turkeys were stung to death. Every fowl as well as every quadruped on the place, I think, was stung more or less. The onslaught lasted until dark. Had this thing happened earlier in the day, I do not know what would have happened. As it was, had no one been around to help grandpa, he would surely have been stung to death. By the light of the lamp we picked 27 stings from his face, neck, and head; besides, there must have been a good many in his hair, which we did not find; yet it did not make him sick nor cause him to swell up in the least.

These bees, when they came at us, did not hesitate and buzz around awhile, but came as *straight* and swift as a rifle-ball—zip, buzz, buzz. Mrs. T. says she would much rather have a bee sting her at once, and be done with it, than to have one stick tight on her clothing and buzz and buzz. It keeps her in suspense, as every moment she expects to be stung, and often is not stung at all.

Now, friend Root, I claim to be a careful bee-keeper; and what started the bees on this rampage, and that, too, in a fair honey-flow from heartsease, is to this day a mystery, as no stock of any kind could get into the apiary, and not a hive was disturbed in the least, so far as we know. M. F. TATMAN.

Rossville, Kan., Nov. 20, 1893.

[We never yet knew of a case, unless it be the one under consideration, where bees generally throughout the apiary would sting any thing and every thing, unless robbing had been going on. Indeed, we can hardly conceive it possible that yours should so behave unless such had been the case. It may have been going on unbeknown to you; but robbing will occur when the honey-flow is dropping off. Thus the bees may have been gathering honey some, and yet be ready to steal and kill if honey were to be had. A horse or cow may overturn a hive, but the stingers belong to one hive, and even then will quiet down shortly. Many a case of bad stinging have we traced to robbing, even when the owner of the bees insisted that the latter had not been robbing.]

THE MICHIGAN APICULTURAL STATION, AGAIN.

R. L. TAYLOR REPLIES.

"*Et tu quoque, Brute,*" *Ed. Gleanings:*—The editor of the *American Bee Journal*, by a play upon the word "report," using it in two senses, attempts to parry the force of what I said about my right to dispose of any accounts, not required by the State Board of Agriculture, of the experiments I have made as I see fit, and about his duty to give the *Review* due credit when he copies such accounts from it; but the above time-worn exclamation involuntarily came to my lips when I found you, in GLEANINGS of Dec. 1st, in the same error.

I wonder if I can make myself understood. My contract with the Board binds me, at the end of the year, to prepare an account of all the experiments and investigations I have made under that contract; that account is called, technically, a "report," and in time will appear in the form of a bulletin. That is one thing. When I prepare an article or account or report of some one of these experiments for the use of some journal, that is another thing. This latter the Board does not employ me to do, does not pay me to do, and does not expect me to do; and these latter accounts can not, by being put together, make the technical report. They all contain matter of argument, etc., which would not be proper in such technical report; indeed, they can be of no very great assistance in preparing that report, for that must be written *de novo*.

What "nice" question, then, can there be about whether I have the right to sell or otherwise dispose of such voluntary accounts as I see fit? You say the same thing has been done by others at other stations, but that the wisdom of it has been questioned. Why should it be? It subserves everybody's interests, and hurts no one's. It costs the Board much money to disseminate information by bulletin, for which it gets no return; so it is, of course, glad to be aided free of cost; and just as certainly are those who are interested in the experiments benefited by getting the results fresh, in "sizable" pieces and a year beforehand.

Again, as the labor bestowed upon the articles referred to was, in the strictest sense, mine, and consequently the articles themselves mine to dispose of as I should see fit, there could, of course, have been no understanding with the Board as to how I should dispose of them.

Mr. Editor, does any thing in the above seem vindictive, or to smack of bitterness? If you say yes, then you don't fully understand me yet. But I admit I don't like loose reasoning.

Lapeer, Mich., Dec. 4. R. L. TAYLOR.

[If we have misunderstood you, we are sure you must have misunderstood us. We do not find any thing in our editorial where we played upon the word "report," giving it two senses, or held that Bro. York should or should not give credit to the *Review* for experiment articles he may copy from that paper. If there is any thing on page 902 that gives you that impression, then either we did not say what we meant or you did not read us right. What we tried to say was this: If the Board to whom you and Mr. Hutchinson originally appeared had no objections to your sending reports or articles regarding experiments that you were making for the State regularly to the *Review*, i. e., if there was an understanding with them to that effect—why, *then* there was, in our estimation, no objection. As you say in a late number of the *American Bee Journal*, that you have the "full authority and even the thanks of the Board" for this work, then GLEANINGS sees nothing out of the way. Perhaps Bro. York questions your right to send these articles to any particular paper. Ordinarily we might agree; but Bro. Hutchinson took much time and money—in fact, was the *only* publisher who took any interest in the matter at the start. For this reason, and for the fact that he pays for this extra service, he ought to have the first right to the articles. Then, too, Mr. Hutchinson does not ask you, if we are correct, to give a full report of all your experiments, but only certain phases of them in the shape of articles; this is extra work, and outside of your forthcoming bulletin report. In a similar way

we asked you, since we had helped you in the matter of measurements, to favor us with an article on the thickness of the bases, or septa, of foundations. You have kindly complied, and the article appears right after "Straws." In saying this we have not tried to defend Mr. Hutchinson or Mr. Taylor, for they are able to defend themselves, but to give the matter as we see it.]

SCRAPS.

BEE-ESCAPES; PRACTICAL SUGGESTIONS.

Last season I used Porter bee-escapes, putting them on in the evening and taking off the honey in the morning. It worked nicely. This season I tried smoke, but my bees got cross. There were always a few drops of honey spilled. This started the robbers, who took advantage of the smoke-subdued bees, and I lost 25 stands by robbing. I shall use escapes altogether next season.

CANDIED COMB HONEY.

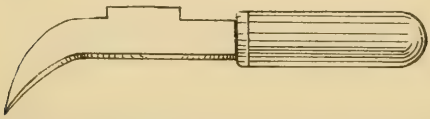
When the honey-flow is irregular the unfinished uncapped cells granulate before the flow starts again, or they are evaporated to such an extent that they candy after being capped.

COMB OR EXTRACTED?

When the season is good, there is but little difference with me. This season the weather "blew hot and cold;" in consequence, the extracting-hives averaged 200 lbs., while the comb-hives gave but 50 lbs. It is a good plan to work for both, and thus be sure of a fair crop.

APIARIAN TOOL.

The handiest thing about my apiary is a large pruning-knife with the blade set solid in the handle. I make the blade out of a flat eight-



inch file, and temper so that I can pry up a frame, separate sections, scrape off propolis, loosen a lid, or take off the side of a hive, without breaking the blade. The curved point gives a purchase equal to a bar.

CLEANING SECTIONS.

To clean the edges, grind off the half of a ¼-inch chisel so that the long point will act as a guide. This shaves off the soiled wood, and

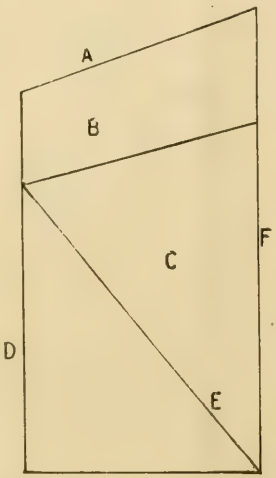
leaves a clean new surface. Or, make it a scraper by turning the edge of a steel blade backward, and having a guide to keep the

scraper from cutting the caps along the edge. To clean the flat sides, glass is frequently used; but it is dangerous, as the broken glass frequently gets into the comb, and might be swallowed by children, and cause death. The cabinet-makers use a steel scraper that can be bought in any hardware store for 10 cts., and there is nothing better. In the absence of a hardware store, cut a piece of steel out of an old saw-blade. File the edges square across, and then, with the back of an old razor, rub back and forth over each edge, gradually turning the edges out and down. The razor should have its sharp edge ground dull, and be set solid in a handle.

GLUCOSE.

A wholesale grocer offered me 8 cts. per lb. for my crop of extracted honey, and explained that he could sell it at 6 cts. at a good profit, by adding 3 lbs. of glucose to each pound of honey, and stated, "My wife brought home a jar with a piece of comb honey in it, and the jar filled up with what looked like very nice honey. She put it on the table, but I tell you it was simply abominable—nothing but a piece of comb honey and glucose. The grocery stores of San Francisco are full of it, but it won't sell, as the people have tumbled to it."

WAX-EXTRACTOR.



To get bottom as well as top heat from the sun, I make my wax-extractor with two glass. A is glass; B, comb-box; C, wax-box; D, glass; E, this face is painted black; F, which is the back, is straight. As the wax melts, it drops on to E, which is always hot. F, being perpendicular, is not touched by the wax; the heat from the glass D keeps the box C and the bottom of the box B very hot, and does away with the need of a lamp, which is unsafe and expensive. If I had the past season to work over, I would run entirely for extracted honey, and "run" it on different lines; but the bees can't gather honey from flowers that are past, and I shall have to wait until another season to profit by the experience of the past.

Murphys, Cal., Oct. 20. E. H. Schaeffle.

[Your scraper-knives are good, and no doubt will be found to be very serviceable. Your idea of having two glass—one to heat the top of the wax and another to heat the bottom—is also good. Come again, friend S., with some of your new kinks.]

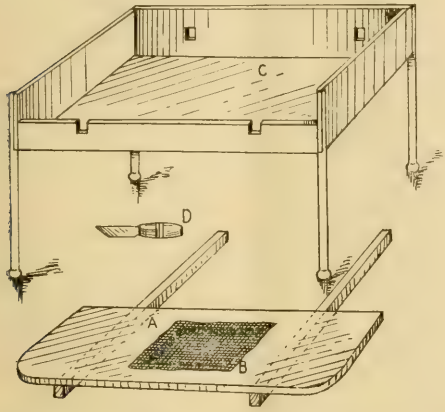
SCRAPING SECTIONS.

A HANDY SCRAPING-TABLE.

Inclosed I send a pencil-sketch of the apparatus on which I scrape my honey-sections, filled and unfinished. The illustration, I think, will make all plain. When the shelf is adjusted, the height should be such as to have the shelf just over your lap. This leaves your arms and hands in an easy position to work when you sit down to the table. The screen bridge being in place on the shelf, as seen in the illustration, and your sections being in easy reach, you are ready to proceed.

The scraping-knife illustrated is a common

shoeknife, and should be of the best steel, with the blade broken off up to about from 1½ to 2 inches in length, and shaped and ground down to quite a slanting or beveled point, as illustrated in the cut; then by gripping the handle, with the blade between the finger and thumb,



C, table, or box on legs; A, table shelf, removable; B, wire screen bridge to scrape sections on; D, knife for scraping.

the thumb acting as a gauge to gauge the point just the right length to scrape the edge or inside, if the honey is not worked up flush to the wood without marring the honey. If the outside edges need scraping, I lay the section down on the screen and scrape one edge, then turn it up and scrape the inside edge of the frame if it needs it, always elevating the section at a suitable angle, the right-hand corner resting on the screen when scraping the inside edge next to the honey; then scrape toward the left hand, or *vice versa*. Proceed in like manner until every side or surface is cleaned. These directions are to apply partly, when the honey is not worked up flush to the wood.

On the above illustrated honey-table this season I have scraped and cleaned up about 2000 lbs. of filled sections, and scraped several hundred of partly filled ones, kept over from last year; and when they have passed through my hands and over the screen bridge they need no brushing or dusting off; and with the renovating process through which they pass, if the work is thoroughly done, and also rubbing the cells down as described in Sept. 1st GLEANINGS, they can, at least if they contain foundation or comb, be used with profit.

The fall flow of honey on buckwheat here is a failure for the first time, in my recollection. The same number of colonies that gathered 2000 lbs. on the first flow have not gathered 200 lbs. on buckwheat. The result is, a lot of empty and partly drawn-out comb, which I am now renovating and storing away in dust-proof boxes for next year's use.

On page 710, Sept. 15th GLEANINGS, Emma Wilson says, "Scraping a single case of sections may seem to be fun; but when I have scraped 1000 or 1500 in a day, it seems like work." Whew! I think so. This beats my time. How many sections do your cases hold, Emma?

G. J. FLANSBURGH.

South Bethlehem, N. Y., Sept. 20.

[We have carefully gone over your description, but do not find that you state just what is the specific use of the box or tray with legs on it. We presume it is to receive the scrapings that accumulate on the shelf A; but, say, don't the fine particles leak through the screen on to the lap?]

HEREDITY IN BEES.

DO CHARACTERISTICS COME SOLELY FROM PARENTS, OR MAY THEY COME FROM NURSE-BEES?

At different times the question has been raised as to what difference, or whether any difference, is made on the characteristics of a young queen by the nurse-bees that attend her during her larval existence. Given two eggs from the same queen, a queen raised from each of them, one of them fed and reared by Italian bees of the best qualities in every direction, the other fed and reared by the vilest lot of blacks that can be found, will one queen be as good as the other? Falling back on my own experience, I have answered the question somewhat in this way: "I've raised lots of queens, some of them in colonies of blacks, and some in colonies of Italians, and I never noticed any difference. It's the queen that lays the egg that gives character to the offspring, as also the drone with which she mated. After a hen lays an egg, can you change the color or the characteristics of the offspring by putting the egg under a different hen to be hatched and fed? When the young queen hatches from the egg, does not the same rule hold? No, I am careful to raise young queens from the best stock I have; but as to the nurse-bees, I care nothing, only so that the young queen be raised in a strong colony, and at a time when plenty of food is to be had."

But from time to time come expressions of belief that a real, an essential difference is made in the characteristics of the young queen by a difference in the nurse-bees; and these expressions come from such respectable sources that they are not to be pooh-poohed and lightly put aside with a wave of the hand. True, the men who hold such belief are for the most part, if not entirely, men who live on the other side of the ocean; but they are men of weight, among them Schönfeld, Bertrand, and Grimshaw, representative names among German, French, and British bee-keepers.

So it may be the part of wisdom not to consider the question as one fully settled, but to give it at least an impartial reconsideration. Even if in all cases previously known it has been found that there is no difference in the appearance of a young queen, whether raised by black or yellow bees, it does not follow conclusively that there is no difference in character, for we well know that there may be a difference in character with no perceptible difference in appearance. A child may bear a striking resemblance to one parent in appearance, and be more like the other parent in disposition. Is it not possible, therefore, that there may be such a thing as a queen having all the outward looks inherited from one source, and other characteristics, not apparent to the eye, inherited from another source?

I don't know much about the law of heredity, and I don't know that the matter is very fully understood at the best. Still, I think we can tell something about it. We know very well that, in the case of the mammalia, the traits of the offspring may be inherited from either parent. A calf is born showing a color like its mother and utterly unlike its father. That color it got from its mother; and the question is, when and how. Very clearly, during its life in the womb, and almost as clearly from the nourishment received from the mother while in the womb. That calf is white, like its mother, although the father is black. The germ, when implanted in the womb of that mother, had no

tendency to white. That same germ implanted in the womb of a red mother might have produced a red calf. So it seems pretty clear that the calf received inherited traits by means of the food it received before the time it came forth as a perfect calf.

A white hen mated to a white cock lays an egg. Whether that egg be hatched under a white, black, or speckled hen, or in an incubator, the chances are a hundred to one that the chicken will be white. An egg laid by a white hen mated to a black cock is hatched under a black hen, and it turns out a white chicken. Isn't it a pretty clear case that the chicken gets its color from its mother, that no change took place during the period of incubation, and that, potentially, a white chicken was in the egg when it was laid? In a certain sense there may be some truth in that—so far, at least, as to say that the hen which sat on the egg had no influence on its color; yet in the fullest sense it is, I think, not true. When the egg was laid, if I am not mistaken, the germ was there with no characteristics except those received from the sire. If such delicate operations could be performed as to transfer the germ from that egg to one laid by a speckled hen, I imagine that it might hatch out a speckled chicken.

If I am correct in this, then the traits of the mother were received by the germ during the time of incubation through the nourishment contained in the egg. A minute ago I said that the calf received inherited traits by means of the food it received before the time it came forth as a perfect calf. In that statement, change "calf" to "chicken" and will not the statement be just as true? That is, the chicken received inherited traits by means of the food it received before the time it came forth as a perfect chicken.

I think now you will see what I am driving at. If it be true of the calf and the chicken, may it not be equally true of the young queen, that she receives inherited traits by means of the food received before the time of coming forth as a perfect queen? In the case of the calf, the pre-natal nourishment is furnished and used inside the mother; in the case of the chicken it is furnished inside the mother, but used outside after the expulsion of the egg. A step farther is taken in the case of the queen, and the nourishment is not only used after the expulsion of the egg, but furnished afterward, and furnished from a different source; viz., the food furnished by the workers. Why shall we not admit that this food used before the time that the queen comes forth a perfect insect makes its impress on the character of the queen, just as much as the food used before the emerging of the perfect calf or chicken? Moreover, we well know that a difference in the food used at that time makes all the difference between a queen and a worker; and is it not possible that it may make other differences? To this, however, it may be replied that there is no difference in character caused by the food in the case of queen and worker—that it is only a case of completed or retarded development.

One of the strong arguments used by those who think traits are inherited from workers is, that the young queen can hardly inherit from the father or mother any traits which neither of them ever possessed. Neither the father nor mother of a young queen ever gathered stores, built comb, or chased a bee-keeper to sting him. How can they transmit traits that shall make good storers or comb-builders, or that shall make cross bees? How can a queen transmit the trait of hardiness, no matter through how many generations bees be kept in a bleak climate, so long as the queen is kept in the center of the brood-nest, and there kept warm?

If, now, you ask me to say whether bees inherit traits through the nurse-bees by which they are fed, I can only say, "I don't know." Some good authorities say they do. Other good authorities say they do not. The theory that traits descend only from father and mother is a long-established one. An exception to a long-established theory is not readily admitted. But we know now that the Dzierzon theory is true, although it came in direct conflict with a long-established theory. So there is at least a possibility that there may be an exception to the rule, that traits descend only through father and mother. If there is truth in it, then it is of great practical importance that we know it and act upon it. The interests involved make it wise for us to try to find the truth, whatever it may be. C. C. Miller.

Marengo, Ill.

[During the reading of the fore part of the article we felt somewhat skeptical as to any inherited traits being received other than from mother and father; when we came to the latter part we doubted less. While we may say, in the case of the calf and the chicken, there would be none, yet when we come to the bee we may have to take a different view, *because* several hundred individuals, besides the father and mother, may have and probably have had something to do in the rearing and feeding of the baby-bee. We have had scores of reports, showing that bees from a queen and drone of gentle stock are nearly as vicious as the bees from the queen formerly in the hive, and whose removal was deemed advisable because her bees were so cross. Now, in this case, either the new lot of bees from the new queen learned to be naughty per force of example, or else the food partially digested in the glands of the original cross nurse-bees served to *carry* naughtiness to the new stock. We have sometimes thought bees learned good and bad tricks of each other. For instance, the *habit* of robbing *seems* to cling to a colony somewhat, even after a change of queens, and after the bees of the former queen are gone. We know that we can teach a colony to be cross by kicking a hive, using it roughly a few times. A runaway horse knocked over a couple of hives for us. Of course, they were cross at the time, but they were cross for weeks afterward, when, before the mishap, they had been well-behaved bees.]

OHIO'S APIARIAN EXHIBIT AT THE WORLD'S FAIR.

DR. MASON DESCRIBES IT.

Mr. Editor:—In accordance with your request I send you a description of the Ohio apiarian exhibit at the World's Fair. Those who have seen the exhibit will not need to be told how it looked; and the photo I sent you, although fairly good, does not show how it was arranged, so I will give a description of it.

I was informed by the chief of the department in which our exhibit was made, that the case in which honey and wax were to be displayed was 6 feet wide, 25 long, and 8 high, inside measure, and I made my plans accordingly. When I got to the place for the exhibit I found the case was only 4 feet and 4 inches wide and 7 feet high, so that the framework I had made at home was too large to go into the case, and the exposition company put two men at work on it to make it smaller, and it took them three days to do it.

The frames, or honey-stands, as we called them, were made of inch gas-pipe, 4 pieces on each side and one between at each end, making ten risers, or supports, in each stand. Each

support had a cast-iron bottom to rest in, and the tops were screwed into brass pieces that held them in place. On these supports were iron rests that could be fixed at desirable heights, on which were placed glass shelves on which to display both comb and extracted honey. There were two of these stands, each 4 feet wide at the bottom, 4 inches at the top, and 6 feet high. They were 8 feet long at the bottom, and about 5 feet at the top. One end of each of these honey-stands was placed about 22 inches from the ends of the case, leaving about 5 feet in the center between the inner ends of the stands. In the center of this space was an iron standard 6½ feet high, with iron supports for nine glass shelves. The shelves were eight square, the lower one being about 3 feet across, and the upper one a foot across.

On this center pyramid were displayed comb and extracted honey, fancy pieces of beeswax, and about 30 varieties of honey-plant seeds—most of the seeds being furnished by A. I. Root; the rest were furnished by myself. The beeswax was part of about 40 lbs. produced and loaned to the exhibit by Mr. Milo George, of Bowling Green, Wood Co., and was admitted by all to be the finest wax on exhibition. It was just as it came from the solar extractor, not having been clarified in any way. It received an award.

The comb honey on the side of the pyramid shown in the picture was a portion of 100 lbs. in 96 one-pound sections, produced and loaned to the exhibit by Mr. Vernon Burt, of Mallet Creek, Medina Co., about three miles from Medina. The sections were well filled out to the wood, the 96 sections containing 100 lbs. of honey, the combs being even and white. They received an award. Mr. Burt also loaned to the exhibit a very fine strong colony of bees; most of the bees, however, were smothered on their journey.

The comb honey on the opposite side of pyramid from Mr. Burt's was a part of about 650 lbs. produced and loaned to the exhibit by Mr. C. E. Boyer, of Ainger, Williams Co. When I called on Ohio bee-keepers through GLEANINGS for honey, etc., for the exhibit, Mr. Boyer was the first to respond, with an offer to loan from 300 to 400 lbs. of comb honey, which he afterward increased to the amount before stated. The honey was in nice white four-piece sections, some of them being almost perfectly filled to the wood. Most of the comb was very white, and all was evenly capped, some of the sections being among the most perfect, if not the most perfect on exhibition. Most of the comb honey in the Ohio exhibit was from Mr. Boyer, and received an award. Evidently Mr. Boyer had "an eye" on the exposition, for I learned from him, when he was at the big show in October, that some of his honey was produced in 1891, and saved for the Ohio exhibit.

Mr. J. B. Wilhelm, of Saint Stephen, Seneca Co., donated a few pounds of comb honey—all he had when my call was made for honey. It was light-colored, and the sections were well filled.

Mr. Louis Schumm, of Willshire, Van Wert Co., loaned the exhibit 32 lbs. of dark comb honey in two-pound sections.

About 75 lbs. of white comb honey was purchased, and, all together, made about 900 lbs. for the exhibit.

Mr. F. J. M. Otto, of Sandusky, Erie Co., donated a few pounds of extracted honey, nicely candied in glass jars, that was produced in 1891.

In the front end of the case were three small pyramids of extracted honey, very light in color, and of fine quality. The center pyramid was 16 inches square at the base, 6 at the top, and about 3 feet high, surmounted by a glass globe about 5 inches in diameter, filled with white candied honey, and labeled, "This pyramid of honey is part of 24 pounds, produced and donated to this exhibit by Samuel H. Bolton, of McComb, Hancock Co., Ohio."

In the right-hand corner was a smaller pyramid, labeled, "This pyramid is part of 120 pounds produced and loaned to this exhibit by C. E. Boyer, Ainger, Williams Co., Ohio."

The pyramid in the left-hand corner was of the same size as the last, and labeled, "The honey in this pyramid is part of 80 lbs., donated to this exhibit by Vernon Burt, Mallet Creek, Medina Co., Ohio."

On these pyramids were several small wax rabbits, made from Mr. George's beautiful beeswax. About forty of these wax rabbits were squatting down in different parts of the exhibit, and called forth many exclamations of pleasure from sight-seers, and not a few had "cheek" enough to ask for "just one as a souvenir." Several buckeyes, known to many as "horse-chestnuts," were also on these pyramids; and Ohio being the Buckeye State, and the buckeye being a honey-producing tree, made their display very appropriate.

In the center of the case, at each of the four corners of the square in which the large central pyramid before described stood, were four smaller pyramids of extracted honey, one of which was labeled, "The honey in this pyramid is part of 60 pounds, produced and loaned to this exhibit by Milo George, Bowling Green, Wood Co., Ohio." He also loaned the exhibit some samples of sweet clover and raspberry honey in Muth bottles.

Another of these pyramids was labeled, "This pyramid of honey is part of 60 pounds, produced and loaned to this exhibit by Mr. Lewis W. Hershiser, Fayette, Fulton Co., Ohio." Lewis is about 15 years old, and his honey received an award.

In the rear end of the case were two small pyramids of extracted aster honey in pound, half-pound, and dime Muth honey-bottles, all labeled with Mr. Muth's labels, and loaned to the exhibit by Chas. F. Muth, of Cincinnati, as was also another pyramid of honey in large Muth honey-bottles, placed in the center of the front honey-stand; and another pyramid of about 100 lbs. of beeswax, and some of Mr. Muth's honey with it, in the center of the rear honey-stand, all loaned by Mr. Muth for this exhibit.

A goodly number tasted of Mr. Muth's aster honey, and all were of the opinion that, if eaten on bread or warm biscuit, no butter would be needed, because the honey had such a buttery flavor. Mr. Muth had also on exhibition two bee-hives, two of his extractors, and two of his honey-knives. In the front end of the rear honey-stand was a good-sized pyramid of extracted honey, labeled, "This pyramid of honey is part of 100 pounds, loaned to this exhibit by Charles W. Frank, of Fairlawn, Summit Co., Ohio." It was a mixture of buckwheat and heartsease. It was a beautiful dark amber color.

Mr. C. Lamson, of Pierpont, Ashtabula Co., loaned the exhibit 24 lbs. of very nice extracted goldenrod honey. Unlike the honey from other sources, it did not candy.

In the back end of the case, between Mr. Muth's pyramids of honey, was a well-proportioned and nicely made monument of beeswax, about 30 inches high, made for and loaned to the exhibit by Mr. D. E. Jacobs, of Longley, Wood Co. When put in place last spring it was of good color; but standing where the morning sun shone upon it, it became somewhat bleached before the close of the exposition.

Miss Maria L. Deming, of Watertown, Washington Co., near the southeast corner of the State, loaned the exhibit about 40 lbs. of a

dark-colored honey that no one who tasted was able to tell what flowers it came from.

Mr. W. O. Titus, of Toledo, Lucas Co., loaned the exhibit about 50 lbs. of beeswax, a portion of which was shown at the rear end of the front honey-stand.

In the back end of the rear, and at the front end of the front honey-stands, were two pyramids of extracted honey in 2, 1, and ½ pound and dime Muth honey-bottles, which I loaned to the exhibit. Some of the honey had candied and been drained, so that it looked very much like sugar. Other portions were partially liquid and partially candied, much of it looking like very fine coral.

In the front end of the case were some honey-jumbles that were made in 1888, many barrels of which were sold in five and ten cent lots in the Apiarian Building at the Ohio Centennial at Columbus, O., in the autumn of 1888, by those in charge of A. I. Root's exhibit. I brought these from Columbus at the close of the Centennial. I gave several a taste of them at the World's Fair, and they said they were as fresh as new ones.

Nearly all of the comb honey was exhibited in crates with glass on both sides, holding but two sections each. The extracted, with the exception of that already mentioned as being in Muth bottles, was shown in a large variety of sizes and styles of glass jars, with either nickel or glass tops, and holding from one ounce to one gallon.

All of the shelves on which the display was made, and the pyramids built up with, were of glass.

For a few weeks I had a strong colony of Italian bees on exhibition in a nice glass hive. A colony of bees or a nucleus with a queen will attract more attention than any or all other things in an apiarian exhibit, especially if there is a bee-keeper to talk to visitors about them.

There were sixteen exhibitors from Ohio in the apiarian department, and eight awards were made on their exhibits, so far as heard from. I believe I have named them all, except that I received an award for "display of honey in marketable shape." A. B. Mason.

Toledo, O., Nov. 4.

OHIO'S WORLD'S FAIR HONEY-EXHIBIT, WITH DR. A. B. MASON ON THE LEFT.

APIARIAN EXHIBITS AT THE WORLD'S FAIR.

DR. MASON DESCRIBES ROOT'S AND OTHER EXHIBITS.

Friend Root:—It is *more* than probable that the thousands of readers of GLEANINGS who have not been at the World's Fair would like to know something about your exhibit of supplies, etc.; and I doubt not there are a goodly number of those who read GLEANINGS who have been here and could not find your exhibit. I have met several such myself; and your own sister, Mrs. Holmes, came *very* near not finding it, although she had been within a few feet of it.

I was sitting on a box by the Ohio honey-exhibit, writing or figuring, and a little bit of woman, with two girls, brushed by me, and in a few minutes came back; and as they passed me again I heard the remark, "I guess Amos hasn't got any honey here. I don't see any with his name."

Hearing the name "Amos," which is quite a familiar one to me, I looked up and asked, "What are you looking for?" and, lo and behold! I had found a sister of A. I. Root, and two of his little nieces, or they had found me, I hardly know which. The "worser half," Mr. Holmes, was waiting down stairs, and it didn't take the little girls long to "raise" him, and then we had a good look at things, and a good but brief visit.

The honey-exhibits, and the exhibits of supplies, were in the gallery at the east end of Agricultural Building, in the south part of the gallery, and your exhibit at the south end of the honey-exhibits. When first put up last May by Dr. Miller, it was back in a corner by itself, where but few saw it, and so much was said (and fault found by your friends and bee-keepers) about its location, that, after considerable correspondence with Ernest, as Dr. Miller was to busy to attend to it, I came in July, and after three days of "wire-pulling" succeeded in getting permission from "the powers that be," to move the exhibit out in line with the honey-exhibits.

As put up by Dr. Miller, the exhibit was in a glass case 8 feet wide and 14 long, and about 7½ high. I have sent you a photo of the case and exhibit as it was after being moved. I made the case about two feet higher than it was at first, and put in the smaller glass as shown at the top, at the right and left ends, the front ones being removed for taking a photo. Making the case higher, and putting in the additional glass, made the case of about the same height as the honey-cases, and added much to its attractiveness. If I remember correctly, you tried to secure more space for your exhibit, but failed to get it, which will account for its smallness and crowded appearance.

When I moved the exhibit I "jayhawked," or took enough additional space to exhibit the extractors outside of and to the left of the case.

Perhaps the photo shows plainly enough what you had on exhibition; but a brief description, as I now call it to mind, may be of added interest.

Near the center may be seen a full-grown Dovetailed chaff hive, with the telescopic cover removed. A perforated zinc honey-board is held in an upright position in the back of the hive by two D. section-cases. I removed one of the frames and put a full sheet of foundation in it and placed it in a glass hive containing a strong colony of bees I had on exhibition. It was left then over night, and then placed as shown in the chaff hive, so as to show what the bees do with foundation. It attracted much attention. A Crane smoker stands on the right back corner of the hive, and one on the left corner. In front of the chaff hive may be seen two dovetailed supers with section-holders filled with sections. One of the supers is placed bottom side up, so as to show its arrangement. These supers belong in the chaff hive. On these supers may be seen a Bingham and two Crane smokers, two A B C books, two sections of honey, Porter bee-escapes, foundation-fasteners, wire-imbedders, etc.

At my solicitation you sent a straw bee-hive, said to have come from Germany, and to be over a hundred years old. This is back of and above the chaff hive, and on it is one of your twenty-cent bee-hats and a bee-veil, and in front stands one of your "fixin's" to raise the quilt so bees can pass over the top-bars of the frames in winter.

At the right of the straw hive are two T supers with sections, one right side up and the other bottom side up, with some of the sections removed. At the right of these is a Miller feeder, large enough to cover the whole top of a hive.

In front of and below the feeder are some shipping-crates, with sections of honey in them; but I don't believe the honey was made by machinery, if it was produced at the "Home of the Honey-bees." At the left of and also below the shipping-crates, is shown brood and thin foundation; and below and in front of this are some Dovetailed hives with supers and section-holders, sections with starters, and separators, all complete; and on them are sections of honey, bee-escapes, queen-cell protectors, slate tablets, wire-imbedders, comb-fasteners, samples of thin foundation, etc. On the left front corner of the lowest right-hand hive hangs one of the most handy little honey-strainers I ever used; and on the right-hand corner hangs a neat pair of ladies' rubber gloves. Between these hives and the chaff hive are shown one of your large saw-mandrels, a Langdon non-swarmer, or self-hiver (I don't know which it is, or whether it is either), a shipping-box, and smokers.

In front of and below the left T super is a Swiss wax-extractor, so arranged as to show all parts of it. At the left of and next to the chaff hive are shown Clark smokers, and small saw-mandrels, and above these a dovetailed super with section-holders and sections, starters and separators, all ready for business. At the left of these, and at the front, is another Dovetailed hive with super and gable cover, with a D. section-holder and a yucca brush on top. By the way, each of the D. section-holders shows a section of honey in front.

Above and back of this hive is one of your twelve-inch foundation-mills; above this a ten-inch mill with a sheet of foundation in front of it; and above and back of this is a six-inch mill for thin foundation. This also has a strip of foundation in front of it.

At the left of these, and in the front of the case, is a dovetailed winter case, with hive inside. The telescopic cover is removed so as to show the super, etc., and on it are some sections of comb honey. Back of and above this hive, I believe, is a ten-frame hive with super and a gable cover, and on this is another bee-hat and veil. If every bee-keeper had one of these hats, it seems to me he, or she, would never want to wear any other in the bee-yard in warm weather. They are light and cool. I have two old ones at home, and shall take the two shown in your case home with me, and then I'll have some nice clean ones for visitors.

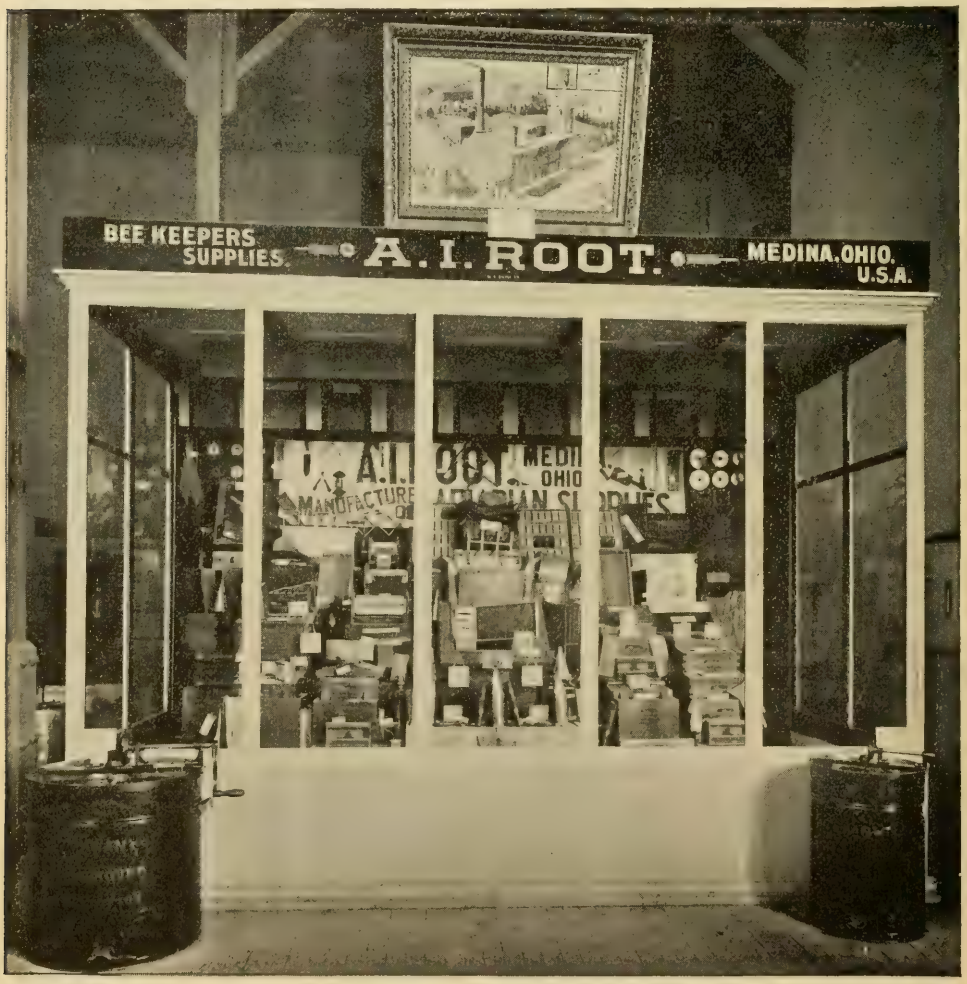
Back of and at the right of the hat is an observatory hive with one frame, very neatly and substantially made. At the extreme left, at the bottom, may be seen three packages, compos-

ed of material in the flat, ready for shipment, for making five complete Dovetailed hives.

I had got this description written to here, while at the World's Fair; but I'm now writing at home; and had it not been for an accident, I should not have known what was hid away in the lower package. While your exhibit was being transferred from the place of exhibition to the warehouse, for shipment, several boxes fell from the wagon, and this package was broken open; and when I arrived upon the "scene," the teamster, with a ridiculously woebegone face, was gathering up the fragments, and I could not help having a good laugh. There on the ground lay parts of every thing that go to make up the inside of a hive-super, and all its internal arrangements. The two other pieces are the sides and ends of the hives. On these is a smoker, and back of it hangs some thin foundation. Above this is a shipping-case, and on it stands a super with a D. section-holder and a bee-brush in it.

In front of the package for hives, but out of sight in the picture, because the front of the case hides it, stands a solar wax-extractor. It was the "innocent cause" of many either unfavorable or complimentary remarks; and it, or one of its ancestors, was the cause of my getting a sarcastic scoring by a maid—(I was going to say maiden lady), but I don't dare to, for she might *possibly* see this.

In the front part of the case, but out of sight for the same reason the wax-extractor is, is a Myers bucket brass spray-pump, with a long pipe extension, for sending a fine spray of water among a flying swarm of bees without unnecessarily wasting the water—said to be better and cheaper than a Whitman. In the same locality with the pump are some Crane and other smokers; foundation, bee-escapes, a nice chaff cushion, rubber gloves, and some of the best and smoothest sections I have ever seen, and they were taken from regular stock. On the back wall of the case is readily seen a large sign, printed on white muslin, such as I am told you fasten on each side of the freight cars you send loaded with supplies across the country. On this sign may be seen honey-knives, different styles of



A. I. ROOT'S EXHIBIT AT THE WORLD'S FAIR.

wire-imbedders, feeders, foundation-fasteners, etc. At the right of the sign are circular saws and bee-brushes; and at the left, emery wheels and bee-brushes.

Above the sign, on the wall, but hidden from view in the picture by the strips of brood and thin foundation that hang from the top of the case, are all manner of the smaller supplies. Over the O's and the upper part of the T, in the word *Root*, may be seen a part of a large wire-cloth Manum swarming-device, the larger portion being hid from view by the hanging foundation.

On top of the case you can see, without telling, a sign; but unless I or some one else tells you, you would not know that the lettering and decorating were done with gold-leaf, the edges of the sign being nicely beveled, and also covered with gold-leaf. The black portion is very nicely covered with black, the whole sign being a credit to whoever made it.

On top of the sign, in a heavy gilt frame, covered with glass, is a very fine colored picture of the factory and some of its surroundings. In the lower left corner may be seen a freight-house where many of the supplies are loaded; and in the upper left corner, at the left of the tall chimney, is also another freight-house, on another railroad, built, I believe, on purpose for convenience in shipping supplies.

In the upper right-hand corner is shown the interior of the office, where the phonographs, shorthand and typewriters, and book-keepers are, and the brainwork done for the "Home of the Honey-bees." At the left of the office is shown the large water-tank that stands on the hill, at the front and right of the factory, about 35 rods away. This is filled by the windmill, and supplies the water at the factory. At the right of the picture, and just beyond the evergreen hedge, I can a-l-m-o-s-t see the residence of the proprietor. I believe it does show in the original.

There is a street in front of the factory; and if the cut were as perfect as the picture, there might be seen in the lower right corner a man, hose in hand, presumably the proprietor of the establishment, sprinkling the vegetable-plants that are in the hot-beds or cold-frames, in front of the hot-house.

The white spot on the lower part of the frame is a printed card that says, "The factory where these goods are made, located at Medina, Ohio; 36-page catalogue free on application." Several of these were in the case.

At the right front corner is a Cowan rapid two-frame reversible extractor. At the left corner is a Cowan improved four-frame reversible extractor that was the observed of all the bee-keeping observers who examined the exhibit, and, I believe, elicited as many comments as did all the rest of the exhibit. It was called a "daisy," a "dandy," and all sorts of endearing names; and the judge, Hon. Eugene Secor, thought its good qualities were so many that he awarded it a medal, a gold one, I presume. A Novice extractor also was on exhibition, but stands out of sight at the left of the case.

Just above the handle of the large extractor may be seen an oblong white spot. It is the side of a section that stands in a Daisy foundation-fastener. The fastener was frequently examined with interest by bee-keepers, and was sold to Mr. Wilcox, Superintendent of the Wisconsin honey-exhibit. The Cowan rapid extractor was sold to Mr. H. H. Emery, of Stoughton, Wis., and the ten-inch foundation-mill to Jas. A. Stone, of Bradfordtown, Ill., secretary of the State Bee-keepers' Association. In the top of the case, seemingly above the strips of foundation before referred to, but really nearly three feet in front of them, hangs a strip of nice brood foundation, nearly twelve feet long.

On many of the articles in the exhibit may be seen small white oblong spots. These are printed cards, telling what the articles are, such as bee-hat, bee-veil, wire-imbedder, Dovetailed hive, etc. In the lower right and left hand corners are white spots, apparently part of the framework of the case, but really printed cards, which say, "Closed on Sunday." You will remember that, when it was decided that the fair was to be kept open on Sundays, we had some correspondence as to what it was best and right to do, you feeling that the best thing to do was to remove the exhibit. It came to me somehow that this was a good opportunity to "show your colors" and make a protest. This, I thought, could not be done if the exhibit were removed; but if left, and plainly labeled, "Closed on Sundays," and covered Saturday nights, and left so till Monday morning, the whole world would know just what it meant, and I so suggested to you. You thought my suggestion a good one, and requested me to carry out the idea. Accordingly, I purchased the muslin for a cover, here in Toledo, with enough to cover the Ohio honey-exhibit also, and our daughter Flora made the two covers, and I sent them by express to Mr. Jas. A. Stone, before referred to, with whom I had made previous arrangements to cover the two exhibits whenever I was not there, and they were covered every Saturday evening during the remainder of the fair.

I may say that the frames in all the hives were the thick-top-bar, self-spacing Hoffman, and that the hives and other supplies that would admit of it were nicely finished and varnished.

Besides the award on the Cowan extractor, the Crane smoker also received an award, and you received an award for display of bee-keepers' supplies. What these awards will be, whether medals or diaplomas, I do not know.

Toledo, O., Nov. 18. A. B. MASON.

RAMBLE 98.

IN THE SAN JACINTO VALLEY.

For a long time Mr. C. F. Simmons and myself had planned a trip into the San Jacinto Valley; and finally one morning late in September found us started on the journey. The distance we wished to make was 30 miles. Mr. S. furnished the outfit, and my recent experience with mules and pintos led me to make no

MR. SIMMONS AND I.

inquiries in relation to what I should be drawn by. The make-up of Mr. S.'s team was one tall lame black horse, the lame leg well bandaged with a white cloth, and one small bay horse,

The tall horse looked patronizingly over the neck of the small horse, and the latter looked up meekly to his big companion. The tall horse was to be taken to the luscious pastures of San Jacinto that the lame leg might heal and the horse be in trim for the fall plowing. Being a merciful man, the owner had to drive slow. With my Waterbury watch and a new lead-pencil I figured that we moved along at the velocity of two miles an hour. The roads were dusty, of course, and we took some of it into our respiratory and gastronomic organs; but it was very fine dust, and we realized no harm. Our gate enabled us to see the country under the most favorable circumstances. We could count the fence-posts with ease; and, while going past a watermelon-patch, I counted the whole crop, 310 melons, less two which we put into our wagon.

SABOBAN HOUSEKEEPERS.

At the young town of Moreno we struck the center of the valley, and could see the whole length of it, which must be over 30 miles; and this whole 30 miles, by an average of 5 miles in width, is more or less in grain - fields. The grain had been cut, and the immense combined header, thrasher, and sacker, had left the sacks in piles which could be seen as far as the eye could discern. After we had got well by Moreno we turned our horses' heads against a barley-stack, and proceeded to take our lunch.

A recent and untimely rain had spoiled the interior of this stack, and our horses were welcome to pick what good they could from it. We found the grain-producers in bad straits, and complaining bitterly of hard times and low prices. Good barley was selling for 50 cents and even less, per sack, and barley hay for $5.00 per ton. A few who had taken land to sow on shares had not enough to pay their expenses, and the products of whole grain-fields were put under attachment and the sheriff's hammer.

An hour's rest enabled us to push forward again with the same rapidity as before; and late in the evening we arrived at our journey's end—the residence of Mr. H. T. Hallock. Mr. Hallock is an enthusiastic bee-keeper, and has a fine fruit-ranch to occupy his attention while not at work with his apiary of over 100 colonies. Mrs. Hallock is also an enthusiastic worker at whatever she finds for her hands to do. The previous night she had driven alone nearly all night to Riverside, 30 miles, with a load of prunes, and reached home again after we had retired for the night.

When we consider that this frail woman came here a few years ago so bad with the asthma that her friends despaired of her ever recovering, we realize the benefits of this particular climate. The next day being Sunday, and our new friends being God-fearing Congregationalists, we all attended church, and were duly edified from the Scriptures. Our rapid drive the previous day left my traveling companion with a severe headache, and he thought nothing but a good bath at one of the sulphur springs would help him; and, sure enough, after the bath and attendant sweat, the cobwebs were all cleared out of his head. The hot springs boil out here in three different places. The springs nearest town have a swimming-pool; the next, three miles below, have mud baths, and are named Relief Springs. Several miles below are the Eden Springs, a sort of free-for-all resort and camping-place.

Mr. Dustin lives just above Relief Springs, where his apiary presents much the same appearance as upon page 512, Gleanings for 1892. We were disappointed to find him absent.

I was pleased to meet Mr. H. I. Morse, also mentioned by the senior editor in 1892. Mr. M. is another successful bee-keeper, a man of a family, and having several irons besides bee-keeping in the furnace of business. Limited time prevented me from accepting Mr. Morse's offer to take me around amongst the bee-keepers, who are plentiful in the valley. Mr. M. thought he could find a good location, and that the Rambler would fit well into the San Jacinto Valley (remember what I said in the last ramble about old Californians giving you a desire to settle near them). To Vale Vista, Mr. Simmons and I journeyed. Here Mr. S. owns a pretty fruit-ranch, and formerly owned a bee-ranch. The latter is, however, now in the hands of another man, and his yield of honey was only about a ton from 100 colonies. This was a light yield as compared with his neighbors, who had obtained from 5 to 8 tons from an equal number of colonies. The yield throughout the valley, however, was not what we can call bountiful. The honey flora seems to be quite extensive, with a great preponderance of white sage; but it seems that, during

the past season, the black-sage localities have gotten away with the big yields of honey; and it is my private opinion, publicly expressed, that black sage is the better honey-plant of the two. Atmospheric conditions in the valley might have had an influence upon the secretion of nectar, as it surely did in many other localities.

It was with much pleasure that I again met my bachelor friend Henry Otto. He happened to come to town from his bee and fruit ranch, just in time for us to have a hand-shake and a talk about bees and honey. Mr. Otto has practiced dividing his colonies for increase, to a considerable extent, and has learned some valuable lessons thereby. I believe he divided three times in one season. He learned that two of the times was too much, and he now contents himself with one division, and makes a success of it. Nearer the coast, division can be made several times during a good season; but back here in the mountains such operations have to be conducted with care.

There was some complaint about there being too many apiaries for the pasturage; still, Mr. Simmons was of the opinion that there were several good openings for the profitable establishment of apiaries, and one good range near the Saboba Indian reservation he was inclined to think would be a good place for the Rambler to settle; and he thought that, if I could not secure a housekeeper anywhere else, I could probably find one here. As I have a very good photo of the healthful make-up of the dames who live in these villages I herewith present it. So far as robustness is concerned there is no fault to find; but as I have seen the methods of cooking performed by such dames as these, I believe I prefer to stick to my own old flap-jack griddle a little longer. Good-by, Sabobans.

Some bee-keepers in these parts seem to think that, if bees are brought down from the mountains, they work with more energy in the valley for a season or two than if kept all the while in the valley. I think, however, that the change of location, even from one portion of the valley to another, would give them just as much of an impetus to work. The plan can be tried here to the fullest extent, for there are bee-keepers quite well up in the mountains. A Mr. Saulsbury has such an apiary. He collects his bees from the rocks. With a burro, a few boxes and

GETTING BEES FROM THE MOUNTAINS, ON A BURRO.

gunny sacks, he spends the day in securing the bees, and coming in at night with the burro well loaded with the bees, which are then run into hives. The disadvantage surrounding these mountain apiaries is their almost inaccessible position; and the valleys offer the accessible inducements for the location of apiaries in them; and in Diamond Valley, San Ignacio, and adjoining canyons, are many thriving apiaries which the Rambler has resolved some time to visit.

To the lover of timber lands the head waters of the San Jacinto River offer some attractions, for here the cottonwood grows with vigor; it is, however, only on the bottom lands. Just as soon as we step up on to the hills they are barren save for the sage and other brush growth. The lovely wild sunflower was out in its glory. It remains in blossom many weeks, during which the bee works it with vigor. Alfalfa is also grown here for hay and pasturage, and yields up a revenue to the bees. Artesian wells supply the purest of water, and all kinds of fruits grow here except oranges and other tender tropical fruits; and there is no reason why that, in time, San Jacinto Valley should not support a large population. The fruit and honey interests live happily together here. The fruit-producer evidently looks upon the bee as his friend and helper; and where such enlightened views prevail, there is harmony.

Mr. Simmons and I were to start upon our return early the next morning. Mr. S. had gone into a speculation, and purchased 100 dozen eggs for the Redlands market. We also had a fresh horse, just a match for our pony, and we expected to get over the ground at a great rate. When we were ready to start, Mrs. Hallock loaded us with fine specimens of peaches and prunes. The aged mother came to the door and gave us her blessing, and said, in solemn tones, "Now, Mr. Rambler, take the advice of an aged woman, and get you a good wife, and live no more the life of a lone bachelor." I promised to consider her advice, and have spent several wakeful nights over it; and, not seeing my way clear to commit such a stupendous deed, I seriously think of retiring into some wild fastness and live the unmolested life of a hermit bachelor.

After we had journeyed homeward several miles I realized that we were getting over the ground with our better team at the rapid rate of two and a half miles per hour, which was a decided improvement over our outward journey. Mr. Simmons, I will bear record, is a careful driver. His wife also says she wouldn't be afraid to ride with him right over the top of San Jacinto Mountain. Such implicit confidence in a man, by his wife, I have not seen for many days; and now, when thinking of the contemplated hermit act, glimmerings of repentance come over the RAMBLER.

HONEY-PLANTS OF DIFFERENT LOCALITIES.

THEIR OFF YEARS, ETC.

My experience includes eight seasons in Iowa, two in Wisconsin, one in Colorado, and one in this State. The principal honey-plants in Iowa are white clover and basswood; in Wisconsin there is much basswood, but in my location there was white clover only; in Colorado, alfalfa and sweet clover; and here, white and black sage and several other plants of only secondary account. Take these five plants from the list of honey-yielders, and the industry of bee-keeping will come to a sudden and sure end in those States.

There are none of them but have what may be termed "off" years, when the atmospheric conditions are unfavorable for the secretion of nectar. The cause of such unfavorable conditions no one has, as yet, been able to explain. In Iowa, in the fall, three months or so after the first blossoming of clover, there comes on what is called a second crop; and while the pastures and roadsides may become nearly as white as

snow, I never knew this bloom to yield enough honey to show in the combs. Why should not this crop of bloom yield honey as well as the first? With this second crop, every season appears to be an "off" season; and the time appears to have come when off years are getting to be more the rule than the exception with our main honey-plants.

Alfalfa has done very poorly in Colorado for the two past seasons. Last year, in well-managed apiaries, the yield was about 30 lbs. per colony; and by reports, I judge that this year it has been still less. Previous to 1892 there were several seasons in which the yield per hive ranged anywhere from 120 to 200 lbs., nearly all from alfalfa. Alfalfa, as compared with the other five honey-yielders I have mentioned, may stand first, excepting basswood. I have never known an entire failure with the basswoods. Cloudy and cold days and dry weather may come; but if there comes only one or two days' gathering from it, we always get some honey. White clover comes into bloom a week or two earlier than basswood; and, though it may not yield a surplus, the bees manage to get enough to live, and patch and prepare the combs so that what basswood gives can be seen.

Poor honey seasons in California are caused by insufficient rain in the winter season to make the sages grow. Some very favorable things we have here are weeks and months of perfectly cloudless days, such that the bees can fly in search of honey every day. In Iowa, pleasant sunny days are scarce—sometimes being cloudy and chilly through nearly all the clover and basswood blooms. Then, again, it may be so dry through the spring that clover is dried up.

In Colorado the weather is between that of Iowa and California—much sunshine, and some clouds and rain. If there were no rain at all it would not affect alfalfa, as it depends upon irrigation. For this reason alfalfa ought to be a pretty sure honey-yielder. Failure may be largely due to its being mowed before it comes into bloom. Clover blooms for some considerable time before the bees get much honey from it—so long, in fact, that the inexperienced may conclude that it is not going to yield at all. In this respect, alfalfa seems to imitate clover. In California, alfalfa is mowed even closer and oftener than in Colorado; and, while its scarcity of heads which escape the mower and sickle tend to lessen the yield, the weather and atmosphere are nearly always favorable. California alfalfa honey is much darker than Colorado alfalfa—about like Iowa heartsease—light amber. It also has a correspondingly strong flavor. In Colorado it is nearly the quality of basswood (Colorado bee-keepers think it surpasses basswood in color and flavor); but I have failed to think that it *surpasses* basswood.

One thing which these western honeys have to their advantage to give them light color and mild flavor is the light sandy soil upon which they grow. Heavy rich soil produces darker, stronger honey, even in the case of basswood-trees. I have kept an apiary on each kind of land at the same time, so as to make this comparison.

I see the report that mountain honey is richer than valley honey. My appetite seems to indicate the reverse, for, the higher in the mountains I find it, the more I can eat, to the extent of nearly making a meal of it; and I have sampled it from bee-trees on the highest mountains in the middle of the San Bernardino range. There were three grades found, the darkest being a very little lighter in color and milder in flavor than pure buckwheat. The different colors were placed in well-separated positions in the combs, which might indicate three periods of the gathering. The light colored was stored earliest in the season, and the dark later—just three kinds, and not an ounce of any other. This tree was located near the "timber-line," much higher than and several miles distant from where sage grows; and the lightest honey was nearer a water color than any sage honey I have seen. In the immediate vicinity I found growing manzanita, whitethorn, buckthorn, yucca, and a peculiar kind of oak which the bees work upon a great deal for honey-dew. I think the white honey came from whitethorn, as I have never seen that kind of honey anywhere else, and as whitethorn grows only on the tops of the highest mountains. The dark honey may have come from yucca, although all the plants I mention, and several others that were new to me, are honey-yielders.

California is a marvelous country in that nearly every tree, shrub, and weed is a honey-yielder, and which may be numbered almost by the hundred. Yet none but sage furnishes a surplus to compare with clover, basswood, or alfalfa. Wild alfalfa, wild buckwheat, alfilaree, burr-clover, sumac, oranges, and beans are about equal to buckwheat, heartsease, and the yellow weeds that grow along the fences in Iowa. Sage growth is entirely dependent upon the moisture of the rainy season; yet when we go up a mountain from the sun side and cross over the summit we find no sage on the shaded side. Nor does sage grow to the tops unless the mountains are very low; and the idea that the bees first work upon the bloom in the low lands and continue up the mountains, thus lengthening out the harvest, is easily exploded. The sage on the scorched mountain-side is shriveled up and dead before that in the valley.

C. W. Dayton.

Pasadena, Cal., Nov. 25, 1893.

TWO QUEENS IN ONE HIVE.

THE PLAN NOT A SUCCESS ACCORDING TO THE EXPERIMENTS OF S. CORNEIL.

During the past two or three years the *British Bee Journal* has been full of what is, in England, called the "Wells plan." Mr. Wells puts two colonies into the same hive in the fall. They are separated by a wooden division-board about three-sixteenths of an inch thick, perforated with holes a little too small to allow a bee to pass through. The perforations are about half an inch apart. The bees use the same entrance, the members of each family taking their own side of the division-board.

At the beginning of the honey-flow, in the following summer, queen-excluding zinc is placed over the frames, and surplus chambers are put on in which the bees of both colonies work in common, without fighting, and, I believe, without the loss of many queens. The amount of surplus obtained is regarded as the produce of one hive; and when compared with the surplus stored by a colony having only one queen, is, as might be expected, larger; but I do not recollect seeing any evidence that it is more than twice as large.

As I use the closed-end Quinby frames, all I needed to give the plan a trial was the perforated division-board; so in the summer of 1892 I arranged eight colonies in four pairs on the above plan. After leaving them about a week, to get the same scent, I put sections on two of the double stocks, and the other two I ran for extracted honey. There was no fighting, but in 12 days the perforations in the division-boards were mostly filled with propolis. Those worked for comb honey swarmed early, both colonies at the same time, and then they sulked and gave me little profit. I gave eight

combs, 10x16 inches, inside measure, to each of the colonies run for extracted honey, for a brood-nest, and over the queen-excluders I placed 2 stories of 16 combs each, making 48 combs in all. These colonies seemed to do pretty well for a while; but on examination I found three out of the four queens missing, although there had been no swarming.

Having taken the notion to run two families side by side, I started about 20 nuclei at the side of as many populous colonies; but instead of using the perforated division-boards I used thin solid boards, having two rows of perforated queen-excluding metal at the bottom, a strip of the metal being tacked on each side of the wood to keep the queens from "touching noses." The queen-cells hatched all right enough; and as the bees had their own entrance in a different direction from that used by the bees of the main hive, I expected to have the young queens successfully fertilized; but before the time came, when they might be expected to be laying, they mysteriously disappeared—killed, as I supposed, by the bees of the main hive.

My son and I decided, on finding our queens all gone, that working bees on the twin-hive principle would not pay us; so we separated our colonies, and have not tried it since.

From the experience I have had I would advise bee-keepers not to risk too much in working two queens in one hive.

Lindsay, Ont., Nov. 27. S. CORNEIL.

[We are very glad to get this report just at this time. It confirms the majority of reports we had some time ago; and yet, if there are conditions under which two queens *can* be made to live in one hive, and give twice the amount of brood and bees, we should like to know what they are. Mr. Corneil's closing caution is no doubt a wise one.]

KEEPING TWO QUEENS IN A HIVE.

SOMETIMES ADVISABLE AND SOMETIMES NOT.

As you invite contributions on the subject, "Keeping two queens in one hive," found on page 844, Nov. 15, I send you a few lines stating a little of my experience, or the conclusions I have come to. I think there is no bee-keeper who has run 20 or more hives of bees a year or two for extracted honey, with queen-excluding honey-board, and fly-hole in top chamber, but knows that two queens can be kept or reared in one hive; and that, let it (the extra chamber) be at the back of a hive or the side or on top, the principle is the same. I have kept bees for over 20 years; but not until I made a specialty (about eight years ago) of extracted honey did I find a young queen laying in the super, with the old lady doing the same on the lower flat; but as a producer of extracted honey I did not see any use in having a laying queen upstairs; so, if appearances were favorable, I started a new colony with her, and a frame of the bees and brood; if not, her head was pinched. So I agree with Mr. Golden, that the knowledge of being able to have two laying queens in one colony is old, and hundreds of bee-keepers must have known it for years, and have made use of the knowledge. When practical, it is a very convenient way to supersede a queen at times. But I think the percentage of loss in queen-cells and young queens is greater in this way than by the nucleus plan. W. HARMER.

Manistee, Mich., Nov. 27.

[Yes, we knew the idea of keeping two queens in a hive was old, and intimated as much on page 843. Some old ideas are good, but for some reason not as much is made of them as there should be. We desire to know not only more about how two queens may be kept in one colony, but also when a plurality of queens may be of service. We are much obliged for the facts you have given us. Whom shall we hear from next on these points?]

BEGINNER'S QUESTION-BOX.

ANSWERS BY E. R. ROOT.

L. A. W., of O., would like to know whether the outdoor-packed colonies should have full-width entrances. *Ans.*—Yes; and be sure they are kept clear of any dead bees that may lodge.

E. W. P., of Mass., has discovered that several of his colonies are queenless, and would like to know whether it would be advisable to send off and get queens and introduce them. *Ans.*—At this time of year we believe we would advise letting the bees alone until next spring. When the bees begin to fly they ought to have a queen introduced.

J. M. C., of N. Y., writes that his bees in the cellar are flying out of their hives, and dying on the cellar bottom. *Ans.*—Perhaps your cellar is too warm. In this case give ventilation but not light. We should not, however, worry over them. They are generally old bees that are too old or diseased to stay in the hive. For the health of the occupants above the room, as well as for the bees, we would keep the floor swept up. Do not be alarmed if you take out half a peck of bees at a time in a cellar containing 25 or 30 colonies.

M. A. B., of Penn., has a large family of small children that play and romp on a floor under which is a cellar containing some 35 or 40 colonies of bees. He would like to know whether the general noise and disturbance will do any harm. *Ans.*—In scores of instances of this kind we do not remember to have seen any reports showing bad results following from such disturbance above. We have wintered bees in a cellar for three winters, under the living-room; and while they were in the cellar we have not discovered that romping or walking, on the part of children or adults, did any harm.

M. J. R., of Minn., writes that the snow has piled up around the entrances of his hives, and he inquires whether there is danger of the bees smothering by leaving them so. *Ans.*—If the snow is light and not soggy, we would let it be. A general thaw, followed by a freeze, may close up some of the entrances, and it is possible that it should be cleared away. But ordinarily, if the colonies have absorbents such as big chaff cushions over the frames, we would let them alone. They will get enough air through the cushion; so we think there will be no danger of their smothering.

L. M. B., of La., says sugar is expensive, but New Orleans molasses is cheap. Would it be safe to feed the latter? *Ans.*—In your climate we should not be afraid to risk it, as we assume that the bees will have opportunity for occasional flights. The best sugar stores are not necessary, except in the extreme North; and even then the bees winter well on buckwheat honey, cheap molasses, and other inferior sweets. But here in the North, granulated-sugar syrup, as it contains so large an amount of sweet for the money, is about as cheap as any thing that can be given to the bees.

F. C. F., of Wis., is rather hard up for money this year, and can not afford winter cases or

chaff hives. He has a wet cellar, and also a garret. Where would it be best to put the bees? *Ans.*—A garret is a poor place at best. We have known of scarcely any good results in wintering bees in such a place. We would risk the damp cellar. But, friend F., for the health of your family, if not for the health of your bees, drain that cellar out as soon as possible. If the bees do not have dysentery, your children may have typhoid fever, diphtheria, and all the other bad ailments resulting from a wet cellar.

N. E. J., of Ohio, says his bees are flying out upon the snow, and dying by the hundreds, on warm, bright days. He desires to know the cause, and how the trouble can be stopped. *Ans.*—Bright sunshine will, many times, call out the old and diseased bees. It may also draw out a few others. But generally we consider that these old bees might just as well be out of the colony as not; and if they are to die soon they had better die with their carcasses outside. But even if some young bees do fly out with the rest, the loss is generally so small as hardly to be worth considering. A bee here and there means a very small number from individual colonies in a large apiary.

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

BIG RESULTS IN HONEY, BY THE "SMALL FRY."

I see by Gleanings you like to hear from the small fry, so I thought I would tell you what I have done the past season. I commenced with 47 colonies in single-story hives, 8 frames, and got 4½ barrels of extracted honey, and increased to 151. Fifty-seven are in double-story, the rest in single-story. I took five colonies in 10-frame hives, and raised my queens at home. When I divided or built a nucleus I always had a queen ready; and from the 5 colonies I increased to 33 all in first-class condition, with plenty of honey. I worked two out-apiaries—one of 100 colonies. I took 15 barrels; the other, 67, spring count, 12 barrels of extracted honey; increased to 93. We have a fine honey county here—never a failure, so the oldest bee-keepers say. All our honey-producing flowers are from forest-trees, wild grape and other large vines, excepting fall honey, which is from goldenrod, heartsease, and wild aster. I have gone into winter quarters with 187 colonies, all in first-class condition, with plenty of honey to pull through. They have only from 3 to 4 months' rest here.

If I am spared I am going to take 10 good colonies and put them in a good locality, and increase to 100. I think I shall have no trouble by raising my queens at home, and always have one ready. I shall try it, and report through Gleanings another fall.

Wrights, Miss., Nov. 19. J. H. Seples.

ROOT'S PERFORATED ZINC ALL RIGHT AS IT IS; PERFORATIONS SHOULD NOT BE NARROWER.

As you call for reports from those who have tried your latest zinc, I will tell you what I know about it. I have used it between the upper and lower hives; have had hundreds of queen-cells built above it; have had them hatch and get to laying above it, all with the old queens below, and have never had one go through it. I have also used it one other way; and if it were possible for queens to go through it under any circumstances they would have gone through under this. In the early part of the fall we (Cleveland Bros.) had a number of nucleus hives with bees in them that were good for nothing but to swarm out once or twice every pretty day. These hives had a strip of your zinc over the entrances; and when the bees swarmed out of them the queens could be seen running their heads through the perforations; but in every case they had to remain lonely prisoners until the bees returned. Please don't make the perforations smaller, but make the *queen larger*. While looking at the queens trying to get through the strips of zinc on the nucleus hives, I observed that they could do no more than just get their heads through the perforations; so it will be seen that it is a queen's shoulders that prevent her from going through, and not the abdomen, as many think.

James Cleveland.

Decatur, Miss., Nov. 18.

[Thanks for your testimony; let's have more.]

QUEENS GOING THROUGH ZINC.

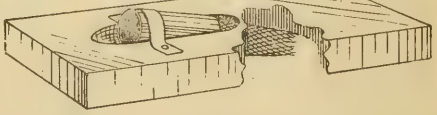
Replying to your request in a recent number of Gleanings for reports of queen-excluding zinc, I have to say that, of 65 hives on which the zinc is used, two queens found their way through. About the same proportion last year. I would not have the openings any smaller. I think them about right. I would rather a queen would now and then go through than have the workers troubled in passing. The zinc used came from your shop. I have used the Chicago zinc, and it excludes altogether too much. C. H. Longstreet.

Mount Dora, Fla., Nov. 22.

[Your experience with the Chicago zinc with perforation $\frac{161}{1000}$ is exactly ours. Probably the $\frac{165}{1000}$ size is as near right as any thing can be, under the circumstances.]

A HORIZONTAL CONE BEE-ESCAPE.

I send you by mail to-day my new bee-escape which I devised. They work very nicely with



me. The block is to represent a honey-board.

Alfred Ferguson.

Guilderland Center, N. Y., Nov. 2.

[We see no reason why this escape should not work nicely. We will explain to our readers, that the end of the cone, as shown in the part of the block broken away, is tapered down so as to just barely let through a bee. The wire cloth at this point, as will be noticed, is frayed out, leaving sharp points to intercept bees going the wrong way. We should like friend Ferguson to tell how the principle works in practice.]

HOFFMAN FRAMES WITH STRAIGHT TOP-BARS AND V EDGES PREFERRED.

I see on page 845, Nov. 15, Dr. C. C. Miller speaks of self-spacing frames and dummies. I have not had experience with bees and hives as long as Doctor M. has, but may be I can give him some suggestions regarding the Hoffman frame and hive. The hive I use is a little different from others. It is 12⅛ x 19⅛ inside. I do not rabbet the ends of the hive, as I nail on a separate ⅜ board the full width of hive, and reaching to the bottom-board. On this I nail the tin rabbet. I use the straight top-bars

and wide end-bars. I would not use frames with top-bars widened at the ends. They are bee-killers. *There is no better frame than the Hoffman straight tops, with wide ends, one side V'd, the other square.*

Lexington, Ky. W. L. RICHMOND.

THOSE "EVERLASTING FOOTNOTES;" WHAT DR. MILLER THINKS OF THEM.

Speaking of footnotes, I have a word to say. Don't you be browbeaten out of their use by any thing that may be said. Footnotes give light and a vivacity that nothing else does. They are just a little in the line of conversation. They are especially useful in confirming what is true, as well as throwing in a caution against the false, if any such thing is needed. The orthodox way is to leave the article without comment; and then, if the editor has any thing to say about it, to say it in an editorial. That's a bungling way at best; and if the editorial is read first, the reader is in the dark; and if the editorial is read last, he must turn back to see what it's all about. Footnotes, the "everlasting footnotes," as some one called them, have been a striking feature, and a strong feature, in GLEANINGS. Don't go back on them. They helped make GLEANINGS what it is. Stick to them. If occasionally dissenting views are given by "E. R." and "A. I.," so much the better. GLEANINGS is a splendid journal without the footnotes, and with them it is * * * * C. C. MILLER.

Marengo, Ill., Nov. 27.

[We leave off the last part of the last sentence, through extreme modesty; therefore the reader may finish it to suit himself. After what had been said we have had a sort of feeling that *perhaps* footnotes were not really desirable. However, we have kept on using them, and have tried to make them just what Dr. M. says they are. How is it, reader? shall we continue to use them?]

ALFALFA, AND ITS IMPORTANCE AS A HONEY-PLANT.

Could you give me any information as to the yield of honey from alfalfa clover? What success do bee-keepers have with alfalfa, where irrigation is carried on — that is, where alfalfa is about the only honey-source?

Riceford, Minn. G. A. LUNDE.

[Alfalfa is one of the most wonderful honey-plants in the world, and bee-keepers in the vicinity of this plant have had more *uniform* success than elsewhere. You will find a very full account of alfalfa, its cultivation, how irrigated, the quality and quantity of its honey, in GLEANINGS for Nov. 15, 1889, page 887.]

NON-SPLITABLE HIVE-COVERS OF PULP WOOD.

Why wouldn't it be practical to get hive-covers non-splitable, made of the material of which the fiber water-pails are made? The pails are very low in price, and a thin straight slab ought to be cheaper. You should be able to find some way of working sawdust into them.

J. C. BENNETT.

Emmetsburg, Iowa, Dec. 6.

[While the wood pulp pails are cheap, they cost twice as much as the regular wooden pails. We can buy slabs of wood pulp large enough for hive-covers, but no one would want to pay the price for hives with such covers. While wood pulp is used for water-pails, and, indeed, answers nicely, it is never, if we are correct, used for outside work on houses, though it is frequently used for inside finishing. We hardly think it would stand the weather.]

A NAIL-PUSH.

This is a full-sized cut of a hard-wood handle which I use for pushing tacks and small wire

nails into hives to prevent jarring. It can be carried in the pocket, and is handy in many ways.

I find that second swarms put on four frames in a hive, with a division-board in the middle, will build nicer combs than putting them in a hive with a full set of combs. After a week or ten days, put two such swarms into one hive and they make a nice swarm. Kill one queen.

I smoked a nest of bumble-bees with your Crane smoker, and the workers left for the fields; and what appeared to be queens ran around in the grass, and would not leave. Are there queens and workers like honey-bees?

Columbus, Wis., Nov. 18. SUPER LIFTER.

[We have no doubt that the tack-pusher would work nicely. Several years ago, when we used to put up bees in pound packages, we always pushed the tacks through the wire cloth into the wood, instead of using a hammer. Bumble-bees have a queen and drones the same as other bees. In a normal condition we doubt whether a nest contains more than one queen.]

LADIES' CONVERSAZIONE.

BRACE AND BURR COMBS.

ELISHA GALLUP; THREE-DAYS' SESSIONS AT CONVENTIONS.

We have always used the eight-frame Langstroth hive, made exactly after the directions of the inventor in his great work, "On the Hive and Honey-bee." A few years since I asked my husband what bee-keepers meant by brace and burr combs. I think that, if bee-culturists had followed in father Langstroth's footsteps closely, and had fixed frames, with only a bee-space between them and the honey-board, they would have remained as ignorant as myself as to what they are.

In looking at the picture of this old white-haired veteran, with his little ones, I called to mind an old hen that stole her nest and brought out a flock of downy chicks in October. A baby two years old and its father 73 seems as one born out of season.

I do not approve of calling a three-days' session and holding only two. Why would it not be well to call for a two-days' session and hold the first one at night, before the first day, as many would arrive the day previous? Many stopping at the Louisiana Hotel would have enjoyed having the opening session at night.

It was six degrees below zero the last of November; and to day, Dec. 4, there is a foot of snow on the ground. MRS. L. HARRISON.

Peoria, Ill., Dec. 4.

[Bee-spaces alone, according to reports and our own experience, prevent burr or brace combs. Width of top-bar certainly is important, and thickness has something to do in maintaining bee-spaces.]

OURSELVES AND OUR NEIGHBORS.

Let us not be weary in well doing; for in due season we shall reap if we faint not.—Gal. 6:9.

My talk this time is going to be a good deal to the boys; but I think it may prove helpful to girls too, and some boys and girls who are pretty well along in years as well. Perhaps I shall put a different construction on my well-known text from the one generally used; but I think you will all agree that it is an exceedingly practical one. It has suggested itself to me because, just before the coming winter, so many are wanting employment, and so many are out of employment. The question is continually coming up, "Why is it that farmers and manufacturers, and other people who sometimes employ help, and who might employ help, can not do any thing for the needy ones?" I shall not undertake to give all the reasons, but I think I can give one very plain reason, and one that will do us all good; and this reason is, that so many, in the language of our text, get weary in well doing—at least, they become uneasy, and grow tired when they are doing fairly well. A great many people in this world can not let well enough alone. It seems to me a great many people are dissatisfied and restless, when they ought to be thankful and happy. And right here comes in this tendency to think you are of more value to the world than the world is willing to pay you. This attitude of heart is a very bad one, and I think it is one of Satan's biggest pieces of machinery to get people into trouble. He whispers to a farmer who is doing fairly well, "Look here, my friend; you know, and everybody else knows, that a farmer never gets rich. A man of your ability and intelligence ought to be doing something else. I would not stay here and drudge for anybody." After Satan has got a listener to go thus far, the way is pretty well paved for some oily-tongued patent-right man or agent for Bohemian oats, or some lottery or gift enterprise, or some scheme to get the upper hand of your neighbors.

I suppose boys can be considered somewhat excusable if they do fret, and get an idea that they ought to have a man's wages before they are out of their teens. But sometimes boys learn wholesome lessons, even in their teens. Let me tell you of one boy I know of. He came to work for us when he was perhaps 15 or 16 years old. He was steady and industrious, did not stop to play, even though others were playing and cutting up around him; and, as a consequence, his wages were steadily advanced—that is, once in six months or a year he would get a cent or two more per hour. After he had been with us for perhaps a couple of years, our engineer mentioned that F. was considerably interested in the engine and boiler, and suggested that he take him under instruction if I didn't object. Of course, I assented, and he seemed to enjoy the hours he spent with the engineer, and was making good progress. After he had been at work a sufficient time he was allowed to look after the engine for short intervals while the engineer tended to something that was some distance away. About this time some of the older and wiser heads of the different rooms of the establishment suggested to me that the boy was hardly old enough to be trusted with so much responsibility—too many lives and too much property were at stake. I assented, and recommended that the engineer had better not be out of sight, and that F. should not have too much responsibility thrown upon him, even though he did seem to be unusually wise and careful. Things went on in this way until F. was 17 or 18 years old. He assisted while cleaning the boilers, and sometimes got up at two or three o'clock in the morning in order to do this. I found out, however, by his time-card, which I inspected every Saturday night, that, after getting up this early Monday mornings, he was in the habit of putting in a full day's work during the day, thus making 13 or 14 hours of labor for a boy in his teens. It may be well to mention right here that the State of Ohio has enacted a law, a part of which reads as follows:

The number of hours of labor required of minors, under the age of eighteen years, employed in this room, shall in no case exceed ten in any one day.

I spoke to F. about it, and I spoke to his father about it, telling them it was not best. I suggested that, when it was necessary to get up so early and help the engineer Monday mornings, he ought to stop work early in the afternoon so as to make up on Monday night for his lack of sleep Sunday night. However, he did not seem to think there was any need of caution—he was stout and well, and he thought it would not do any harm; and as he was over 18, if I am correct, he was not really transgressing the letter of the law. Our engineer has for some time been in the habit of shutting off the steam from the glass gauges that indicate the amount of water in the boiler, just as he leaves at night. The first thing he does in the morning is, of course, to open the valves connecting the glass gauges, so that they may once more indicate correctly the height of the water in the boilers. His reasons for doing this are, that these glass gauges sometimes break, even in the night, when nothing touches them—at least, it is said they sometimes break in this way. I have never known such a thing to happen in my own experience, and I confess I am a little incredulous. If a door should be opened, letting a cold blast strike the hot glass, I can understand that it might possibly break; but I can not understand how these heavy glass tubes should break thus, when the engine-rooms are perfectly closed, so that no circulation or draft can affect the temperature. No matter. He thinks it best to do this way. It seems that this boy had been instructed to fire up just before starting the engine; and when he commenced firing he was also in the habit of opening the valves to the glass gauges. One morning, by some absent-mindedness or something else, he opened the valve to *one* of the boilers and not to the other. The engineer glanced up when he came, and noticed that both boilers had just the proper quantity of water. In a little time the water began to sink in one boiler, and he started the pump. As the other boiler seemed to have plenty, he did not start the pump; then he began to think it singular that that special boiler was using up no water at all. Had he then turned on the water without investigating, our whole establishment would probably have been blown up, and perhaps several lives lost. He tried both valves to the glass gauges, and found the first all right, but was startled to find the second had not been opened at all, and the water was out of sight instantly, as soon as he moved it. Like a wise and experienced man as he is, he drew the fire as quickly as possible, and investigation showed that the flues were already red-hot, and great damage done to the boiler.

Let me say further, to the credit of the engineer, that he at once shouldered the whole of the blame, and told me to figure out what the damage was, and charge it up to him. As he had been a very good and faithful man, however, and had never had an accident of any sort before, I told him I would wait a while before I made out my bill of damages. When things got settled a little, careful investigation brought out the fact that the *boy* had forgotten to open

one of the valves. He cried, and seemed to feel much remorse at the consequences of his boyish blunder. He did not tell us to charge up to him his part of the affair; but as he had been a pretty good and faithful boy, I concluded to let it pass. Imagine my surprise, a few months later, when the engineer told me he guessed I had better have a talk with F. He said that F. was all the while complaining that he did not get as much pay as he thought he ought to have, and it was really spoiling his value as a boy. I had a pleasant, good-natured talk with F., and reminded him of the accident that had cost me more than $100, just because of his forgetting to open that valve. Said I:

"Look here, F., if you should work for us a whole year for 2 cts. an hour less than you are really worth, it would not make up for the consequences of your blunder. If I were you, I think I would keep pretty quiet about an increase of pay for quite a little spell, after what has happened."

He took it good-naturedly, and finally said that, if I would give him a steady job right through the *winter* at 10 cts. an hour, he would be perfectly satisfied. Well, you know that, during the fall, there has been a financial depression all over the land. We found it hard work to find something to do for even our old regular help. One hand after another was dropped, until we should have been glad indeed to give F. a vacation with the rest; but my promise stood in the way of that. In a very few days, however, I was relieved of the necessity of finding him something to do, in a very unexpected way. The engineer told me that F. was still dissatisfied with his pay, and that he guessed I had better let him go for a while until he could discover for himself when he was well off. In fact, he said he thought F. would not stay any longer without an increase of wages. I talked with F. again, and reminded him of his promise. But this boy in his teens had got a raise of wages in his head to such an extent that there was no help for him. He finally said something like this:

"Mr. Root, you know as well as I do that I am worth more than 10 cts. an hour."

"No, F., I do not know any thing of the kind; and it seems to me the common-sense way to settle all disagreements of this kind between capital and labor is to ask the question whether you can get more than that anywhere else. Are you *sure* you can find a place where you can get more than 10 cts. an hour? Please remember the hundreds and thousands who are out of employment—good capable men. Why, F., a good mechanic offered yesterday to work for me during the winter for 10 cts. an hour, rather than be idle any longer. You are a boy. It is true, you have, through diligence and good behavior, learned enough in one special line so you could earn what you are getting with us, providing we had plenty to do, which we have not. However, as you feel so sure that somebody else will give you more, suppose you try it."

Accordingly, he did give up his job, and started out to find somebody who would pay him *what he was worth*. This getting restless, uneasy, and dissatisfied, seems to be a sort of disease sometimes, and there is only one kind of medicine that I know of that has any effect on it. Good advice, a plain statement of well-known facts, and all that sort of thing, do not seem to make any difference. The only way is, to let the boy have his own way, like the prodigal son we are told about in the Holy Scriptures. F. put off his greasy overshirt and overalls, donned his Sunday clothes, and looked, as he is, a nice, bright, clean specimen of a young man. I do not know how much hunting he did for a place; but he came back in a couple of weeks, and said that, if I would give him his place back again he would be contented to do the best he knew how. But it was too late. Another very good boy was doing so well in F.'s place that we could not think of turning him off. This other boy was also skillful in the machine-shop, where he worked a great part of his time, so there was no prospect, for some time to come, of an opening for F. anywhere. Another thing, the man who employs labor dreads having any thing to do with *dissatisfied* people. A dissatisfied man is seldom a profitable hand. Peter Henderson suggests, in one of his books, that it is better to pay a good man a little *more* than he is worth, sometimes, rather than have him go about his work in a dissatisfied way. Well, I have tried that remedy, but it has seldom worked satisfactorily. The man who is dissatisfied at 15 cts. an hour will pretty soon become uneasy again until he has 20 cts. F. finally came around again and said that, if I would give him something to do, he would work for *whatever* wages I thought I could give him, and try to remember when he was well off. But still I could do nothing for him. He became weary in well doing, in the language of our text, and he is now reaping the reward, for I suppose the text works both ways. The man who becomes weary in well doing shall *also* reap. In fact, we have Scripture for it. "Whatsoever a man soweth, *that* shall he also reap."

Perhaps the most direct application of the text I have quoted is in regard to spiritual things. All along down through the ages people have become weary in well doing. In that wonderful chapter in Malachi the prophet says the people are dissatisfied, and break forth in a general complaint something like this:

"Ye have said, It is vain to serve God; and, What profit is it that we have kept his ordinances, and that we have walked mournfully before the Lord of hosts?"

That word "mournfully" seems to me to come in very aptly. There are people in every age and generation who talk that way. They say, "Who wants to go about always with a long face, and be afraid of doing this, that, and the other, because somebody may call it wicked?" Then the Christian—perhaps oftener the young Christian, but perhaps sometimes the old one—says to himself, "Well, I declare! I do not believe it worth while to be so very precise. Other folks are having a good time all around us, and why shouldn't we have our share, instead of being so very conscientious and puritanical?" Like poor F. they give up reasonably fair prospects, spend what little they have laid up for a rainy day, and then repent at leisure because they did not know when they were well off. Sometimes it is not money alone that they have wasted. The consequences of having a good time, "as the rest of the boys do," are a terrible appetite, or, worse still, a contagious disease that hangs to the poor victim every day and every hour for the rest of his life. "Whatsoever a man soweth, that shall he also reap."

Now, then, dear friends, old and young, if you have been thinking that a careful, honest Christian life was almost too tame and humdrum for this day and age of progress, consider what I have just said. Let me give you one more illustration right before me:

A man came to me a few days ago and asked for work. I told him there was no use in detailing his circumstances—it was absolutely impossible for me to help any more people in that way. He pleaded that he was a stranger in the town, out of money, with a sick child on his hands; and he said, furthermore, that *folks told him*, if he would come to me, I would give him some work—that I always gave people work who were in distress, and he was even beginning

to complain as though *I* were *responsible* for his troubles. I was told afterward that he had a steady job in Cleveland at $1.35 a day, but somebody told him I employed help and paid a good deal more than that. Without even writing to inquire, or making a journey himself, he gave up his job and moved his family to Medina; and the last I knew the King's Daughters were helping his wife and children along until the father could get work. He finally came to me in such desperate straits that I told him I had some wood that I wanted chopped, and said I would pay him 60 cts. a cord, stovewood length. He said that, if he only had an ax and saw he would take up with my offer in a minute. I told him I would furnish him both ax and saw, and go out in the woods and teach him how to do the work most expeditiously. After I made the promise I considered how many responsibilities were on me already, and felt sorry that I had undertaken to look after one more helpless individual. The ax and saw were put in order, and I placed them where I could find them quickly when he should come along, drawing a long sigh at the time, to think the printers were out of copy, and that perhaps more than one was already doing his work wrongly because I could not get time to look after him. Well, when the morning came when we were to start out for the woods, and the needy man did not put in an appearance at all, I drew *another* sigh, but it was a sigh of relief.

Now, then, if I have not got all the truth in my talk to-day, I have got hold of one great big truth; for I am sure one of the greatest reasons why there are not more people who are getting two or three dollars a day, and are at the same time honestly earning it, is because they do not heed this grand old text—

Be not weary in well doing; for in *due season* ye shall reap if ye faint not.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

GARDENING IN DECEMBER.

As a rule we have about as little gardening to do in December as in any other month in the year. Of course, there is stuff to sell that has been stored away in the cellar; but people generally are not quite ready for greenhouse products during this month. But something comes in right here that is a little encouraging. I remember that, two or three years ago, when we took lettuce and onions out of our greenhouses in the month of January, the boys would bring them back, saying that everybody made fun of them for bringing lettuce in January. They said the time to buy lettuce was in the spring. A month later, however, when people had begun to get anxious for green things, the lettuce sold very satisfactorily. Since then, however, we have had some sales of lettuce in January; but I think we never sold any of any account in December. I have tried to start a trade in it Thanksgiving and Christmas, but the sales were very small.

Perhaps you may remember that, in my Notes of Travel, page 821, I mentioned the fact that our folks were building plant-beds for lettuce right over the pathway of the big exhaust-steam pipe running from the factory to our home. This was on the 20th day of October that the boys were setting out the plants. I remember that, a week later, our people in passing along there, and seeing handsome beds of lettuce in vigorous growth where there was not any thing, less than a week before, uttered a good many exclamations of surprise. Well, those beds of lettuce have not had a bit of care since that day. The ground has not been stirred, nor has a weed been pulled; yet now we have about the handsomest lettuce I ever saw in my life. We purposely put it in rather close together; and now on this 11th day of December, just 50 days later than they were set out, we are taking out every other plant to give them room. Of course, they were covered with sash; but the weather has been so severe that the sash has hardly been off unless it was to catch an occasional shower of rain. By the way, the very best remedy for the green fly I have ever found is to give the lettuce-plants a good soaking for 12 hours, or, still better, 24, with a rather cold rain. If the plants are properly hardened by tilting the sash, any rain that is not so cold as to freeze into ice will do the lettuce no harm; and even a little freezing does not harm it much. When it gets tall enough so that the foliage rests against the glass, the frost on the glass will injure it. Well, these plants I have been telling you about were, so many of them, touching the glass, that, day before yesterday, we raised the sides of the beds all around to accommodate the extraordinary growth. We did this with 1¼-inch lumber. To hold those side pieces in place, a skillful mechanic first toenailed them to the sides of the bed. This was to make a close joint to keep the frost out. Then these 4-inch plank were held from tipping over by driving a stake down inside of the bed at every joint, and another stake in the middle of the 16-foot plank. The stakes would not be necessary were it not that the sash sometimes have to hold a heavy weight of snow; and if they should tip over, crushing down a big crop of lettuce, it would be rather expensive. The reason why these lettuce-beds have required so little care, is, that they have a steady, constant heat, day and night, week in and week out. Speaking about this steady, constant heat, reminds me that I have not yet told you that my new discovery in utilizing exhaust steam is now running six different radiators in our home. I do not suppose that everybody feels as happy over them as I do. Two of them — those in our best rooms — are nicely bronzed; and as I exhibit them to admiring friends I usually say, "There! do you see that? —a thing of beauty and—*h t* for ever.'" Now, isn't this just wonderful, that we can take such an irregular source of heat as exhaust steam, and make it send a steady, even, and constant stream, and afterward, by means of hot-water radiators, have this steady, even, constant heat *concentrated* at any one point you choose? Mrs. Root could not believe that such quiet-looking, innocent things, hardly warm enough to burn a person's hand, could heat up a good-sized room; and it does look a little funny, it is true. The secret is, these modern radiators with their many coils contain a vast amount of heating surface; and even if the inclosed hot water is not up to the boiling-point, if the machine is kept steadily at work it sends a great quantity of warm air all over the room. But this is not gardening.

How about selling the lettuce? Why, when we got ready I told the boys to put ¼ lb. in a good strong neat paper bag, and fill a basket with these packages. They sold the whole lot the first trip, sold out again the next trip with a larger quantity, and the prospect is now that we shall get rid of all the lettuce in these plant-beds, right in the middle of December, at 20 cts. per lb.; and I am not sure but real nice lettuce, bleached so as to look almost like White Plume celery, would bring 20 cts. per lb., at least a certain quantity of it, *any* day in the year, winter

or summer. Now, then, you who raise lettuce for market, what do you think of a string of hot-beds that carry an even, steady heat, all along, without costing a cent for manure or any thing else in the way of heating-material, after they are once started? Do you say everybody can not have exhaust steam? Well, my friends, exhaust steam is spouting out and wasting its heat in the wintry air, in almost every neighborhood and community throughout our land; and I believe that, as a rule, men who run engines will be very glad to have you take their exhaust steam off out of their way, providing you give it sufficient room to move so it does not back up on the engine.

ONION GROWING, ETC.

I have had considerable experience in growing onions by the different methods, and have also grown many different kinds; but I'm not certain of having any thing new to offer.

Of the different methods of culture, I prefer the new one—that of transplanting the young seedlings from the hot-bed—especially so if it were not for one trouble—that of the plants dying down in the beds. I have studied hard to find out the cause, but haven't fully succeeded. I believe the vitality of the seed has much to do with it. I have tried several different strains of the Prizetaker variety from different seedsmen, and find quite a difference. Three years ago was my first experience with the new method, and I had no trouble whatever. We raised an excellent crop, an average of nearly 900 bushels per acre, on a rich clover gar len-patch; but the last two years we have not been as successful, owing to the trouble mentioned. I have raised some seed of my own, and taken special care of it, and I hope to overcome the trouble fully.

We have been troubled a good deal with worthless onion seed. The White Victoria has turned out every time to be a worthless flat onion of no value at all We did not pull them this year. We let them stay in the ground, and pulled them early in the spring for bunch onions. This is the only way we ever derived a cent's worth from these onions. I will sow no more of this variety. I like the Southport White Globe pretty well as a white onion for transplanting. It is a late onion, and grows to a fair size. It is the best white onion I have tried so far. But I don't think there is any thing ahead of the Prizetaker for the main crop. It is not as good a keeper as the Southport White Globe.

We grow a good many the old-fashioned way. "The good old way of yesterday" is not so slow; and, as a rule, it is the safest.

I like the Southport Yellow Globe a little better than Yellow Danvers. It is a little heavier yielder, of a better shape, and nearly as early. It is an excellent keeper.

The Southport Red Globe is a good onion, but not a good yielder for a red variety. It is nearly as early as Yellow Danvers, which is its chief point. Prizetaker is a heavy yielder, but must be sown very early or it will not mature, and must be put on the market early. We bought some seed of our local dealer last spring. We bought it for Yellow Danvers; but it turned out to be some other very late variety, and was about a fourth scullions. I never saw any thing like it, and never want to again.

We have not found any thing better for bunching than the old Egyptian Potato onion.

I have not much room to speak of commercial fertilizers; but for the benefit of any who are thinking of listing them I will say that I have tried several kinds, including Mapes' "special onion" manure, at the rate of 800 lbs. per acre; and by very careful measurement we have not found them of any value whatever, nor unleached hard-wood ashes from our sugar camp. Give me plenty of composted stable manure and a rich clover sod, and I can grow onions profitably at 75 cents per bushel, if I can get first-class seed, which is of vast importance. I know by experience that poor seed is dear at any price. E. S. MEAD.

Olivet, O.

[Friend M., I am surprised to hear you say that you never had any nice Victorias. Surely you do not mean to say that seed you bought of us has turned out in the way you mention. By the way, is it not true that every new strain of onions when first sent out produces a much better crop than the seed to be had in the market two or three years later? It may be that, like potatoes, a new variety is needed every two or three years. My opinion is, however, that somebody is needed constantly who will grow seeds as carefully after the onion has a reputation as he did when he was selling sample packets of a new variety. Oh what a chance there is for seedsmen, or, rather, for a real honest, earnest seedsman! A few days ago our veteran friend A. W. Livingston made us a visit. He asked me if I did not want some Yellow Globe Danvers onion seed. I told him the price was too high; but when he said they grew the seed *themselves* I made an order at once. If Mr. A. W. Livingston saw the onions selected for this crop of seed, and supervised the growing and saving of the seed, I would readily pay a dollar a pound extra for it. It seems that you too, friend M., do not get any help from commercial fertilizers. Now, then, who does get any help—that is, where they put the fertilizers on, say, a dozen rows and then a dozen rows without any?]

SHALLOTS, CHIVES, ETC.

Friend Root:—By this mail I send you two white shallots (in German, *Schallotten*) and two red ones. We are raising them since coming to this country (8 years), and consider them the best keepers, if they are taken out of the ground about the 4th of July. I can not get at chives now; will send you some later if you do not get any elsewhere. In German it is called *Schnittlauch*. B. GEISSLER.

Basco, Ill., Dec. 8.

[Now, friend G., we are ever so much obliged to you for those beautiful, firm, pearly-white onions; but they have got us into trouble already. You call them white shallots. I thought shallots meant something like Egyptian onions for spring bunching only. Now, I should call these White Multipliers, except that there is nothing to show that they multiply or divide. Will you please tell us the difference between a shallot and an onion? also, how do you get these beautiful shallots that are ready to pull in July? Do you plant seed or sets? Thank you for your offer of chives; but we have received several lots already; and the perplexing thing is, they are not all alike. Those sent us by friend Goldsboro are something like a leek, and are as large as your finger. Somebody else sent us some that looked like potato onions, and yet all call them chives. I am the more glad to get the communication from you, friend G., because you are a minister; and if you don't know about these things you can doubtless get us on the right track. I want to see shallots, chives, potato onions, multipliers—yes, and perhaps even leeks and garlics—straightened out and put where they belong. Now, who is going to help?]

CHIVES.

The remarks you make in Nov. 15th GLEANINGS regarding "chives" awaken some very pleasant memories of our boyhood days when mother, with her loving hands, prepared and handed us the customary bread and butter for the 9 A. M. and 4 P. M lunch. How many times we went out into our little vegetable-garden in the back yard, to get some of the chives, which we would cut up into little pieces about ¼ to ½ inch long, and cover our bread and butter with them! How we enjoyed these simple lunches! This was over in the old "Fatherland," a good many years ago. The chives have come over with us, and a number of bunches are growing in my garden. I would have sent you some of the roots with this; but it may be that you have received from others all you need by this time.

FRIEDMANN GREINER.

Naples, N. Y., Nov. 21.

TILE DRAINAGE; WATERING-PLACES FOR STOCK.

I have read "Tile Drainage," by W. I. Chamberlain and yourself; but I should like you to give me some information not in the book. I wish to drain my spring with tile, which is 900 feet from the river, and I want several watering-places for stock. The tile will be 3 feet below the surface where I want the watering-places; and as I have had no experience with draining I do not know how best to arrange those watering-places. We have splendid building-stone. We could scoop out a way down to the watering-place, and pave with stone so the stock would not work the dirt down into the opening. There is very little tile in this part of our State, though a good deal in the western part, or, as we term it, West Tennessee. Tile is a good deal dearer at Nashville than with you, from what I can understand. I have some four-inch tile in some wet land, which cost me four cents per foot at Nashville. I live 20 miles south of Nashville. We have a good deal of land in this county that needs tile very badly; and if some enterprising firm that manufactures tile would send a practical man who could explain what is needed they could sell a great deal of it; but most of them are like myself—they know nothing about it. If you can give me some idea how to make the watering-places you will confer a great favor. W. H. FARMER.

Franklin, Tenn., Dec. 9.

[Friend F., we have been studying over a similar problem all summer, and I will tell you what we have decided upon. I should not like the plan of digging down to a level with the tile, as you propose. Where a road is cut through a hill so you might place a watering-trough beside the road without making an excavation on purpose, it will do very well; but to avoid these expensive excavations I would locate your watering-trough on the top of the ground. If you have plenty of stone, by all means make a stone trough; and in order to get the water up into the trough, you will have to go along the line you propose to lay the tile, up hill, until you get where the tile would be a little higher than the top edge of your trough. At this point make some sort of reservoir—a large-sized tile set on end, for instance. A sewer-pipe 18 inches or 2 feet across is better. Let it come to the surface, and have a stone or wooden cover over it to protect it from trash and accidents. Let your tile pour a stream into this little reservoir. From this lead either an iron pipe, or tiles jointed in cement, down to your trough. If your spring furnishes water the year round, so that there will be a running stream, your trough will never freeze over. Provide a suitable overflow, and let this overflow go right down into the tiles, and pass off just as it would if there had not been any watering-trough at all. I do not believe the expense will be very much more than the excavations you speak of, and you will have a very much neater job. If there is considerable descent from your spring, you will not have to go up hill very far to get head enough so as to run the water over into your trough. I hope this notice may suggest to some tile-maker the idea of occupying your field.]

DOCTORING WITHOUT MEDICINE.

SOMETHING ABOUT OUR TEETH.

In this age of progress, if you expect any mechanic, no matter how skillful he may be, to do nice perfect work without adequate tools, you are greatly in error. A real nice tool, in the hands of a man who takes hold of it with enthusiasm and energy, will often pay for itself in a single day. Well, my experiments in dieting have pretty well convinced me that a good deal of our ill health, and many of our aches and pains, are the consequence of not masticating our food perfectly before it is turned over to the digestive apparatus. I have been getting quite well acquainted with our dentist lately. In fact, I have spent two or three hours a day with him almost every day for the past two weeks. I told him just why I wanted to ask him questions. He is a bright, wide-awake, live man. He attends the dental associations and lectures, takes the dental periodicals, and I think he is pretty well abreast of all the modern improvements in the line of his work. I happened to mention to him that it was quite a privation to me to give up eating apples right out of hand, as I used to in my younger days. Said he:

"Mr. Root, you take a nice apple—just ripe enough, but not too ripe—and scrape it with a knife, just as women do sometimes for babies, and then you can eat apples with impunity. Just try it, and report."

Sure enough, I found he was right. I can eat all the apples I please if I scrape them up fine and smooth. How does this come? Why, my teeth are getting to be so old and ricketty that they no longer pulverize and crush every particle of the apple as they used to do when I was younger. The consequence was, that I swallowed the apple in the form of lumps or chunks, more or less. The teeth were not doing their business—could not do their work, perhaps—therefore the stomach could not do its work without great effort; hence distress, uneasiness, and perhaps indigestion. Baking the apples, or making them into sauce, might do pretty nearly as well; but I have quite a fancy for a raw apple, uncooked and unsugared. Again, I happened to notice in one of the health-journals that people who are distressed after eating beans will find they can eat them with impunity if they are cooked very fine, and then have all the skins removed by putting them through a sieve or colander, thus making a sort of bean porridge or soup. On testing beans prepared in this way I experienced no unpleasant effect whatever. Very likely a strong powerful digestion would manage the chunks of apple, with skins, seeds, core, etc., thrown in, as well as with the skins of the beans. In fact, on my big wheel-rides across the country I eat almost any thing that I ever ate, without any trouble; but even if this is true, it pays to have good teeth, and use them.

While in the dental chair a great many customers came in from the country. Sometimes

they took long rides, tormented every step of the way with toothache. I told the doctor, when he started in on my work, that, as this is our dull season, I would either go home or wait, when he had customers who could not well come some other time. I accordingly left my seat, and stood by while he pulled teeth, advised patients, etc. In fact, I have greatly enjoyed studying up human teeth and dentistry for some weeks past. Well, when it comes night I would rather read a dental magazine than any of my agricultural papers. Most of you know how keenly I enjoy studying up a new industry or a new line of industrial work. By the way, there are quite a few dentists among our bee-keepers. I know a dozen or two. This class of people usually need recreation outdoors; and if the bees are near the dental office the dentists can very often put in their time when there are not very many patients around. And I just want to say, too, that the dentists of our land are a nice set of men; that is, they are as a rule. In the first place, a man who is not a good man would hardly undertake to earn his living by working inside of the mouths of people generally, good, bad, or indifferent. In fact, I think they might put up my favorite text for a motto over their doors—"Not to be ministered unto, but to minister." I know they make us groan and howl sometimes; and it was a rare study to me to see my friend and neighbor go to work to relieve suffering, even when he knew he must inflict terrible pain before the relief could come. I learned to see by his face when a difficult case was before him; and I heard him exhort his patients—yes, I heard him exhort *me* a few times—to go through with the ordeal with a brave spirit. I believe he suffered almost as much as they did, sometimes.

Well, if there is any business in the world where "a stitch in time saves nine," it seems to me it is caring for the teeth. After some of the very difficult and painful operations of extracting the roots piece by piece, of decayed teeth, I would ask the question:

"Doctor, if this individual had cared for his teeth, had them looked over very frequently, and promptly filled as cavities appeared, am I to understand that all this suffering and loss of teeth would have been saved?"

"Most certainly."

Some years ago I think our dentist told *me* substantially the same thing; and for several years I used to come to him, say once in six months. A good many times, after a careful examination, he would tell me my teeth were all right, and needed no attention, except that they be kept clean. Finally, like other people, I became careless and let several years go by. Then there was a great amount of filling to be done; some teeth were hopelessly gone, and one had to be extracted; and as the result of that neglect, my teeth got into such shape that it was very difficult for me to chew my food thoroughly. After having had one tooth pulled, and suffering ever so much from the toothache, I made a new resolution, and had my teeth attended to every six months again. Since then I have not had a bit of toothache. But recently the dentist decided that quite a number of my double teeth were going to pieces unless they had prompt care. After discussing what was best to be done under the circumstances, I decided to have them capped with gold, and the missing ones replaced by attaching them to the gold caps on each side; and as I dictate this I am rejoicing in having, for the first time in years, a full set of tools for mastication. Before investing in so many I had one capped, something over a year ago, to see how I liked it; and now I can do good work on almost any kind of food. During nearly two weeks, while the gold caps were being fitted, I was obliged to live on soft or semi-liquid food, or have whatever I ate mashed up very fine. The beneficial effect on my health became apparent at once, and the experiment gave me an opportunity for deciding unquestionably that much of the distress and difficulty I have with my digestion is owing not only to a lack of mastication, but perhaps to the use of skins of fruit, or vegetable food in such a coarse state that the digestive fluids can not readily work it up fine. My friend, if you have trouble with your digestion, just try using only food that is mashed up fine, or in a semi-liquid state.

I know a good many will plead that they can not afford to pay the dentist so much money. But, my friend, you can afford to have a tooth pulled when it aches; and you may think you can afford letting the teeth go to pieces; but I do not think you can. And, again, you can afford to send for a doctor when you are sick. That may be all very well; but by sending for the dentist a year or two *before* you send for the doctor, you may be saved much pain and suffering, and money too. A good many of us are inclined at times to lose faith in doctors, or, at least, in drugs and medicines; and perhaps no one can ever settle the question conclusively as to whether the drugs and medicines did any good or not. But there is no chance for any question when a broken bone is to be set or some surgical operation is to be performed. In these cases the doctor's work is almost as plain as that of the carpenter or blacksmith. You see what he does, and you see the result of his work; in fact, you have a tangible result in your possession, in place of the money you have paid. Now, it is so in dentistry. The dentist fits you with good and efficient tools for performing almost the most important work a human being has to do. Some of the best physicians we have of the present age are curing people by simply furnishing nature with the right kind of material (in the shape of proper food), so that she may herself do the mending and repairing. Going to a dentist often, that he may keep your teeth in good trim, may not be exactly "doctoring without medicine," but it is certainly one line, and a very important one, of improving our general health without either drugs or medicine. Some years ago our dentist had some circulars printed, which he gave away to the public. I have thought best to give a few extracts here in conclusion:

Do not have a tooth extracted unless it be from absolute necessity, and of this allow your dentist to be the judge. The toothache is but the penalty of violated law. Nature never pardons an offense against her. She may reprieve, but she never pardons. Never part with a tooth, nor the root of a tooth, that can possibly be made serviceable, any more than you would permit a surgeon to amputate a finger that has a felon on it; for a tooth once removed from the mouth is lost for ever, and can never be restored. The contour of the face thus disfigured can never be restored in all its symmetry by artificial means. When the relation of the teeth, mouth, and mastication, to digestion, is better understood, we shall have better care of the teeth and mouth, and people will be more careful to masticate their food thoroughly before swallowing it. Disease is said to be a sin. We acknowledge the truth of the saying, but go on sinning, by doing, or neglecting to do, the things which will produce or prevent disease and consequent suffering. "Peace on earth and good will among men" can not reign so long as decayed teeth and offensive breaths exist. This is one of the penalties of individual neglect.

On arising in the morning, use your tooth-brush vigorously, for that is the time that the mouth is in its worst condition; and of all times this is the one when you should use something to cut the secretions, as you use soap to remove grease and other matter from the hands. By so doing, you will soon be surprised at the wonderful appetite you have for breakfast.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
Illustrated SEMI-MONTHLY
36 PAGES 7×10
$1.00 PER YEAR

The Lord is slow to anger, and great in power, and will not at all acquit the wicked.—NAHUM 1: 3.

EIGHT extra pages in this issue.

THE new series of the *Canadian Bee Journal* is proving to be a great improvement over the old series.

DR. MASON looks too sober in the picture of the Ohio honey-exhibit shown in another column. Say, doctor, why didn't you give us a square look?

A VERY important point brought forth in the article by R. L. Taylor is, that "age is no disadvantage to foundation." This confirms what Mr. Doolittle said in a late number. Until facts shall be brought forth to the contrary, we shall advise that foundation be not rejected simply because it is old.

SPECIAL attention is called again to the book review in this issue. The thing that is particularly interesting is to see how generally Huber is right and how generally Huish is wrong. Fortunately we are placed at a time in the world's history when we know almost to a certainty the right and the wrong side of the disputed points between Huber and Huish.

THE *American Bee Journal* has just been making some "Inexcusable Mistakes." We are sort o' glad of it, because over this way misery loves company—see page 884. Well, to do a little more confessing ourselves, we headed Mr. Boardman's item, on page 889, "Raising Sweet-clover Seed," when we should have put it, "Sowing," etc. Couldn't blame this on to the typos this time.

GOOD men may honestly differ. Alack the day when editors or correspondents can not express honest convictions for fear they may hurt the feelings of the other side! Where there is an honest difference of opinion, as there may be between Bro. York and ourselves with reference to the Michigan Experiment Station, there will be no wounded feelings, because each of us accords to the other sincerity of purpose and honesty of opinion.

THE publishers of the *American Bee-keeper* are about to undertake a novel plan of making their deadheads pay up. They propose to "publish a list of the accounts" in their February number, and "will offer them to the highest bidder." The list will include back dues on subscriptions. No doubt the list will speedily grow smaller before February. The scheme is not a bad one to make the "poor-pays square up;" but we shouldn't like to undertake it.

DR. MILLER, in Straws, picks us up on the statement, made in answer to a correspondent, that "non-swarming means in most cases little or no honey." We will acknowledge to the doctor that the statement as we left it is a little open to criticism. What we had in mind, although we see we did not say so, was, that the *effort*, on the part of the apiarist, including all the various fixings to prevent swarming, so disconcerts the bees, that, if they do not swarm, they do not gather honey.

OUR exhibit of supplies at first was back in a corner, as Dr. Mason explains in another column; but this was through no fault of Dr. Miller, who first set it up. Even after the Fair was open, it was a long time, owing to the general confusion, before Buchanan would say where the exhibit should be put, although we had engaged a certain space. After much solicitation, Buchanan finally put his foot down on the floor where one corner of the case might come. Dr. Miller marked the spot with a nail, glad to get even something definite. Our exhibit, being among the first put up, showed up a little in the rear when the others were put up.

YES, Dr. Miller, I did hear things a little differently twenty years ago from what I do now, and may God be praised for an enlightened hearing. But I take exceptions to your expression, "Every bicyclist seems to be inclined to double himself up like a letter C." I have always ridden straight up, and I always mean to ride straight up; and although I never expect to enter the lists among the racers, yet I get along pretty fairly. In regard to football, I think it is high time that some of our *college professors* were taken by the collar and straightened up. I am afraid there are other people besides the wheelers who are inclined to double up like a letter C, especially when the "gambling mania" gets a clutch on our sports and recreations. A. I. R.

THE *Progressive Bee-keeper* says: "No class of publications can show as clean advertising pages as the bee-journals of to-day. They are free from quack doctors and other humbugs that fill the columns of many of our newspapers. Even our religious papers are full of swindles." Mr. Leahy has put it about right. We are surprised and ashamed that some of our best religious papers do contain in their advertising pages that which is not bread, and satisfieth not. They of all papers ought to be the leaders in good clean advertising, as well as in every thing else. We reject a large amount of advertising because we do not want our readers duped, and because we do not care to lumber up the cards of our regular patrons with every thing under the sun, good or bad.

THE year 1893 will soon be gone; and, according to the general custom, we presume we ought to express suitable acknowledgements for past favors, say something appropriate for the season, and then tell what we are going to do for 1894. When we see in so many journals the usual stereotyped platitudes of the season—well, somehow it makes us "tired." There is nothing magical about the ending of the old year or the beginning of the new. GLEANINGS proposes to go on, just as it has been doing, but always looking for improvements first, last, and *all the time*. Of course, we've got lots of new schemes for the new year, but we think it better to let them materialize at the proper time, unheralded. These remarks are not suggested by any thing appearing in bee-journals of late—they are too practical for platitudes.

PROF. A. J. COOK'S future address will be Claremont, Cal., care of Pomona College. The apicultural world will probably hear from him the same as formerly. We hope that, in his new home, he will find so much to write upon apicultural matters that he will have nothing to say about sugar honey. We are very sorry to see that he has been writing more articles on the subject for some of our apicultural papers, even intimating that he believed that there was a large amount of such honey on the markets. If there is, it is not sold under its true name. That being the case, and it being produced in quantities, it is sold for genuine bee-honey, and

this is almost as bad, in point of deception, as the glucose fabrications. We feel quite certain that Prof. Cook must be mistaken. So far, California honey can be produced and put upon the market more cheaply than any sugar honey. And now that Prof. Cook will be in that land of sunshine, we hope he will see that sugar honey is not practical, no matter what else he may say about it.

We call special attention to the article of R. L. Taylor, in this number, on the subject of the bases of the different grades of foundation. The subject is a vital one to bee-keepers; and we, as manufacturers of foundation-mills, are already at work to see how we can remedy the trouble—namely, of thinning down the bases of foundation unnecessarily thick — because it seems to be a fact that bees require them to be only $\frac{10}{1000}$ of an inch thick, and that they will reduce to this thickness if not already so. We can make foundation of almost any weight; but it is not so easy a matter to reduce the bases of all grades of foundation to a hundredth of an inch, making up the difference in weight in the cell-wall. We believe we have the most perfect machinery in the world for making foundation-rolls, and we shall do all in our power to solve the problem, because it is a waste of time for the bees and perhaps of material to have the bases or septa too thick.

The last consignment of imported queens to Australia went through in rather bad order; in fact, it was not alone the queens sent from Medina, but those sent from various parts of the United States. The complaint seems to be that the candy became so soft and messy that it daubed up the bees and queen too. In our own case, the food was made precisely like that upon which queens at other times have been sent to Australia so successfully. We can not imagine why the candy should have become soft, unless it was from a dose of sea-water, or because of a very hot climate into which they may have gone on reaching their destination. A summer candy, we know, must be made harder than one designed for cool weather. But when queens leave here at the approach of winter, when the weather is very near freezing, and then finally in three or four weeks more come into a climate that is excessively hot, the conditions are complicated somewhat. If we can be sure of the same climate clear through, we can insure safe arrival of queens. We shall try again.

MR. LANGSTROTH AND MR. ROBINSON.

We are sorry to see that C. J. Robinson, in the *American Bee-keeper*, is again casting reflections upon the good name of Rev. L. L. Langstroth. Mr. R. brings up old controversies that are of no particular importance now; and even if what he says is all true he manifests a jealous spirit, not to say a bad one, toward the name which we as bee-keepers all over the world hold in grateful remembrance. If Mr. Langstroth were in health, so that he could answer the imputation of what practically amounts to a lie placed against his name, the case might be different; as it is, it is in bad taste. When Mr. Langstroth visited us a couple of years ago he explained to us in detail this whole matter. He spoke very kindly of Mr. Robinson, and expressed regret that he (Mr. R.) should feel toward him as he did. Mr. L.'s statement of the case, if it were published, would quite satisfactorily explain certain discrepancies Mr. R. places against him. It is not necessary for us to go over the details, even if we could remember them distinctly as given to us by word of mouth, for the bee-keeping world to-day is not interested in it.

THE HABIT OF SCORCHING ON THE BICYCLE.

Quite a number of doctors, including our friend Dr. Miller, are poking fun at the fashion of bicyclists in leaning over while in the saddle. Most of them who condemn the practice, insisting that this method of riding is injurious, are those who are unskilled in the use of the wheel. The fact is, there are extremes both ways. There is such a thing as riding like a bean-pole, and there is such a thing as humping the back so that the rider actually looks like a monkey on a stick. This last is unnecessary, and probably injurious; but we know from personal experience, and a very wide observation, that a slight leaning forward of the back, keeping it straight, and the shoulders back, does tend very materially to add to the effort of the rider, as well as to give him a better leverage in climbing hills. Some time ago a certain doctor, who said in a bicycle journal that, although he made his living by his knowledge of medicine, so long as he could ride further and easier by "scorching," he was going to do it; and that so far in actual practice he could discover no injurious effects.

If, for instance, one is running or climbing stairs he finds it much easier to lean over; so in riding a bicycle. Most of our long runs of from 75 to 100 miles per day have been done with the back inclined at an angle of nearly 45°; and having tried the perpendicular form and the other, the last has given the greatest comfort. Yes; but theory says this is all wrong; but *practice* doesn't.

"But," you ask, "why do you take all this space in a bee-journal to defend a practice that is so generally condemned? Simply for the reason that, as we expect to go among bee-keepers next summer as usual, we do not want to be thought foolish and idiotic for riding with the back slightly inclined.

P. S.—We have just this minute noticed that A. I. R. has touched on this subject. Well, if we don't agree, remember that we have ridden more miles.

BAD COMPLAINTS AGAINST ADVERTISERS; HOW WE DEAL WITH 'EM.

One of our best and most reliable commission houses—one that bee-keepers have spoken of in the highest terms—has received a bad complaint from a bee-keeper who claims that he was unjustly used. We have looked the correspondence over, and, as nearly as we can make out, the bee-keeper is himself to blame. The commission house in question did more than it agreed to, and still stands ready to do whatever is within the bounds of reason.

The older we grow in business experience, the more we are convinced that it is not possible to please everybody, or to do business always in such a way that an occasional awkward and bad mistake may not occur. Some of *our* statements have been so misconstrued by malicious parties as to make it appear, on the face of things, that we are unjust, dishonest, unreliable, and every thing else that is bad. In some cases we know the parties who think this way of us actually feel that we are dishonest, and that they have been greatly wronged, when, if they knew the facts, they would think very differently, even though they might not be willing to acknowledge it.

So, then, when we receive a bitter complaint like the one referred to, relative to some one of our advertisers, it is not our custom to jump at conclusions, and publish the party, but simply present the facts as they have been presented to us, and let him give his side. In nine cases out of ten the whole complexion of the matter is changed when we know both sides. So we say

here to our would-be complainers, that we do not propose to publish as frauds, and unworthy of confidence, those against whom a complaint has been made, without hearing all sides, and, as a general thing, even then not until two or more complaints have been made against the same party. We nor any one else has very much patience with a man, however, who persistently refuses to answer letters. In *such* cases we assume he is actually guilty of the charges preferred against him, and govern ourselves accordingly. Those who have had experience in business, we find, are more apt to exercise a little charity than those who are unable to understand from practical experience how mistakes *may* occur in business.

BEE-PARALYSIS; SLANDEROUS STATEMENTS.

Bee-paralysis (nameless bee-disease) has been found difficult to cure. We once thought the change of queens would remove the trouble; but reports show that that doesn't work. Later, strongly salted water sprayed on the combs was said to be a specific. Sometimes it seems to work a cure, but more often not. The last is sulphur; and as this remedy is cheap and simple of application it may be well to give it at least a trial. A correspondent writes:

I have had several cases of bee-paralysis, and salt had no effect. But I have discovered that powdered sulphur, well sprinkled over combs and bees, cures the worst cases in from one to three days. When bees get lazy, that is the commencement of the disease, and an application of sulphur kills the fungus growth, and the bees go to work with a vim. I have cured ten cases with it, and it does not injure the bees. Joseph Monnier.

Planter, Fla., Dec. 7, 1893.

Perhaps it may be well to state, in this connection, that we have been accused by a certain party, through an agricultural journal, of sending this disease to the Pacific coast. The accusation comes from a party who holds a personal grudge against us, and who fails to tell the name of the bee keeper who is alleged to have received the disease of us, evidently for the purpose of preventing us from defending ourselves, or of making an investigation. The *Rural Californian* has had in the past similar libelous attacks from this same party. The publisher apologized, as we can prove by a letter in our possession, for the first attack, and promised that there would be no more of it. As there has been a repetition of it, we have placed the matter in the hands of our attorney; and the *Rural*, and all other papers who copied that item, will deal with him and not with us. The fact is, that the apiary at the Home of the Honey-bees has not had a case of bee-paralysis for some years; and even then it yielded to mild treatment (removal of the queen). At one of our out-apiaries we had a mild case that yielded to the salt cure.

BEE-JOURNAL EDITORS AS HOBBY-RIDERS.

In the last number of the *Bee-keepers' Review*, Mr. Hutchinson writes very entertainingly of hobby-riding, of the tedium of riding the bread-and-butter hobby too long and too hard without a respite, and how to vary, or, rather, how *he* varies, the monotony between times by riding other little hobbies as a sort of recreation. His experience has been almost exactly ours, and we were not surprised to note that he has been riding some of our old hobbies; viz., machinery, printing, bees, amateur photography. We remember we tried once to get him on to this last; and now if he will get on to the bicycle hobby there will be two (perhaps more) bee-journal editors with nearly identical interests and identical pleasures. How well the "you push the button" hobby has served to add interest to our respective journals is evidenced by their illustrated pages.

Mr. Leahy, of the *Progressive Bee-keeper*, says the click of the type-writer and the hum of business once had its attractions, but now he finds it necessary to vary it somewhat. He proposes to seek rest and enjoyment, after the toil of the day, in the hoe. Editor York rides a bicycle; and whether he rides any other than his special line of business, we do not know.

We do not mean to carry the impression that bee-journalism is dry and uninteresting—not a bit of it; but we do mean to say that those journals are better because those same editors have a little recreation of hobby-riding *under control*.

MEETING DEATH BRAVELY.

I am charged with giving the impression, either by direct statement or inference, that none but Christians die bravely. Dear friends, I did not mean to do any thing of the kind, for I know full well that many who have no faith whatever meet death bravely and unflinchingly. They die exactly as they would have a leg or an arm amputated, scorning to shrink from that which must be faced; and I honor these noble men and women for meeting that which they *must* meet, in a manly and womanly manner. During our recent war, and during accidents by flood and fire, we have many examples of this. Yes, and railroad engineers, and others occupying responsible positions, have many times marched bravely into death, simply that they might save the lives of those intrusted to their care. Perhaps I am not competent to decide in regard to such matters; but my belief is, that God is pleased with this kind of unselfish and unflinching devotion to the good of humanity. It may be that it counts for more in his sight than the mere fact of having been a member of the church all one's lifetime. Our proofreader suggests right here, that these examples of Christ-like sacrifice are the result, largely, of living in a Christian nation. Among the heathens, and in heathen lands, such instances are very rare. When the people of the United States were doing so much to relieve the starvation in China, they were absolutely obliged to get somebody besides the Chinese to carry the food to the starving ones; and in running railroads through heathen lands we must employ our own people for engineers, conductors, etc. The uneducated savages would steal, and shirk the responsibility at every turn, caring nothing for the lives of others.

What I tried to call attention to is, however, quite a different matter. One who trusts in God, and who believes the Author of the universe looks down upon us with kindness and love through life and death, can do something more than meet death bravely. He can say, with Paul, "For me to live is Christ, and to die is *gain*." And many Christians die rejoicing, and even shouting, at the glimpses of heavenly glory that are sometimes revealed to them while they yet have a hold on life. Dear friends, it seems to me that this is hardly a subject for controversy. In fact, in striving to teach how to live and how to die, I have studied to avoid controversy, and I am quite willing to leave this matter with you all. If you have not already done so, note carefully the way people have died, whom you have known, and decide in your mind whether Christianity commends itself as seen on a death-bed or not. A. I. R.

I am really afraid that many of us are complaining and finding fault with the very things we *ought* to thank God for.

THE following is an editorial that appeared in the *Bee-keepers' Review;* and, in fairness to Bro. Hutchinson, it should be placed before our readers:

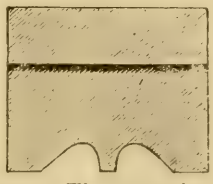
E. R. Root calls attention to Hasty's remark, that Mr. Taylor drew conclusions favorable to foundation, and that the editor of the REVIEW argued in favor of starters, both using that big table as a basis. Beg pardon, brothers, but Mr. Taylor called attention to the fact that those hived on starters "held their rate of gain decidedly better than those hived on comb or foundation." I then called attention to this fact, and argued that, if the harvest had continued a little longer, or had the test been commenced a little earlier, those on starters *might* have come out ahead. When Mr. Taylor sent in that report he accompanied it by a private note in which he said, "There is a big argument in those figures for starters," and I did wonder a little that he did not enlarge a little more on this point in his summing-up.

TRADE NOTES.

TOP-BARS FOR 1894; TWO SLIGHT CHANGES.

A number of bee-keepers have been asking us what special improvements or innovations we were about to introduce in the line of supplies for 1894; and for the benefit of these and others it may be well to tell what we propose to do, or, rather, what we shall *not* do. Our line of supplies, including Dovetailed hives, Hoffman frames, and thick top-bars, have been so generally indorsed by those who have given them a careful trial, as is evidenced by hundreds of letters we have from pleased customers, now on file, that we shall make little or no change. Aside from this, on general principles it is not wise to make any radical changes too often. When we changed, three or four years ago, from the Simplicity hive, thin top-bars, and metal-cornered frames, to the implements mentioned above, we did so because the signs of the times seemed to demand it. Now no sweeping change is called for. That being the case, for e sake of uniformity of goods, if for no other a son, we propose to keep along in the same general lines for 1894.

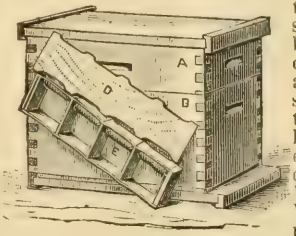
But we have made one or two slight improvements. The first one to which we call your attention is in the matter of top-bars. So far from there being a general complaint against having top-bars too thick, too clumsy, etc., there has been a call to have them still thicker. The top-bar of our Hoffman frame of last year was ⅝ thick and $1\frac{1}{16}$ wide. In response to a demand for a thicker bar, we changed our cutter-knives so as to leave a comb-guide like what is shown in the accompanying cross-section. The engraving is full-sized, and measurement will show that the perpendicular edges are ⅞ deep; the comb-guide is molded out as before, but in such a way as to leave square blunt corners opposite it, so that the bees will not take these rather than the center, as starting-points for combs. It will be remembered that the top-bar for last year had the same comb-guide as now, only that the wood was cut away on both sides, so as to leave the sides of the bar only ⅝ deep.



We may explain that the black horizontal line one-third of the way down on the cross-section shows the projection, or that part of the frame that rests on the rabbet.

This change in the brood-frame and top-bar is so slight that it will not make the least confusion with frames already in use.

Another slight change that we have made, or, rather, are about to make, is in the matter of the wood separators in the comb-honey dovetailed supers. Instead of having both sides scored out ½ inch deep, as shown in the separator at D in the small cut herewith presented, we scored out only *one* side. While at the World's Fair, and particularly at the Big Convention, we learned that it would be an improvement to make this change, because on the upper side the bees sometimes build the comb up above the opening, and out through it, making a slight bulge near the top of the section. On the *bottom* side the separator is scored out the same as before, because the bees seldom if ever bulge the bottom of a comb; and because the section-holder bottom-bar $\frac{5}{16}$ inch thick, together with ⅛ inch for the section, practically leaves the bottom side of the section entirely covered up.



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SPECIAL NOTICES.

SECOND-HAND FOUNDATION-MILLS.

We offer at special low prices the following list of second-hand foundation mills which have accumulated on our hands during the past few months. If any desire a sample of foundation made on these mills before ordering, we shall be pleased to mail it on request stating the kind or number of mill that you want.

One 6-inch hex., No. R; price $10.00. This mill is in good condition, and just right for surplus foundation 9 to 10 feet to the pound.

One 6-inch hex., No. Y; price $10.00. This is a good mill, suitable for surplus foundation 10 feet to the pound.

One 6-inch hex., No. A A; price $10.00. This is in good condition, and suitable for surplus foundation 10 feet to the pound.

One 6-inch hex., No. B B; price $10.00. This is in good condition; has light cell-walls, and will make foundation 11 feet to the pound.

One 10 in., round cell, No. C C; price $12.00. This is in good condition, and will make medium and light brood foundation.

All the above have the latest style of frames; the ollowing are old style:

One 10-inch round cell, heavy, No. W; price $10.00. This is suited for only heavy foundation, and will answer nicely for that purpose.

One 9-inch Dunham, round cell, heavy; price $8.00. This mill is in fair condition, and is suited for heavy foundation only.

SECOND-HAND MACHINERY.

We still have on hand quite a line of second-hand machinery. If any of our readers or their friends contemplate putting in machinery we are prepared to fit you out from cellar to garret with everything you need in engines, boilers, machinery, shafting, pulleys, hangers, belting, saws, etc. The following is a partial list of the second-hand machinery we have to sell. If you desire further particulars we shall be pleased to hear from you.

One 20-H. P. Fishkill horizontal engine, rebuilt, and as good as new; would cost new $400; will sell for $175, or with new boiler for $375.

One 24-inch two-roll Fay sandpaper machine, nearly new. Price, new, $450; will sell for $150.

One V-groove section machine, nearly new. This is our make, old-style with screw-feed; sold some years ago for $75; will sell now for $35.

One double-head tenoning-machine, especially arranged for making the combined rabbet and miter joint of the Simplicity hive, but can be used for making sash and window-screen frames, etc. We could not build such a machine, and sell it for less than $150; we will sell this for $50.

Two extra large saw-tables for general use, to cut off or rip, with counter-shaft attached to frame; worth new, $50 each; will sell for $17.50 each.

Two four-piece section-machines, as good as new; they cost new, $85 each; we will sell them for $25 each.

A lot of ripping-tables with heavy mandrel, and screw and chain attachment, such as we used for sawing sections in the old way; worth $25; will sell at $17.50 each, including 1 rip-saw.

SPECIAL SECTIONS AT SPECIAL PRICE.

Having finally perfected and got in operation our new section machinery by which all our sections are now made by a new process, uniform in thickness, and of superior quality and finish, we desire to close out our entire stock on hand made in the old way; and in order to do so we offer them at the following special prices, which will apply so long as this stock lasts. You may also deduct the early-order discounts from these prices as on other goods ordered from our catalogue, as noted on page 4 thereof: 4¼x4¼x1⅛ and 1⅞ No. 1 cream sections, at $2.00 per 1000; 5000 for $9.00; 10,000 for $17.00.

4¼x4¼x either 1⅜, 1¾, 7 to ft., 1⅛, 1⅞, and 1½ inch, No. 1 white sections, at $2.50 per 1000; 2000 for $4.50; 3000 for $6.50; 5000 for $10.00. In lots of 10,000 or more, write for special prices. Notice that we have none of the regular width 1⅞ or of 1⅛ No. 1 white sections in this stock, though we have the No. 1 cream, which are equally good, except in color. We have, all told, only 300,000 to 400,000; and the quality of these goods is superior to many offered at catching prices, and are a bargain to those who can use these widths. The 1⅜ is so near the regular width that very many could use them without inconvenience, especially if they use a wood separator where they did not use any separator with regular sections.

OUR NEW EXTRA POLISHED SECTIONS.

We have not said much in print recently in regard to what we were doing in the way of making a superior quality of sections, wishing to have every thing in the way of improvement accomplished before doing so. We were a little premature a year ago, and did not care to repeat the same mistake. We have not been idle all this time; and we believe that, when you examine samples, you will agree that *no better* sections are made anywhere; and you may decide with the two people, whose letters we quote below, that they are superior to any other. We ourselves modestly decline to make this claim, but leave it to our friends to speak for us. We have made and exported one carload of these sections, and are at work on other large orders. We sent a sample on request to W. E. Smith, of Kenton, Ohio, a manufacturer of sections, by the way, and here is what he writes on receipt of it:

Your sample section just received. To say that they are nice would be expressing it very mildly. I think I have never seen any that were anywhere near as fine. I shall probably be over to your city in February to see you about getting some sections. Please accept my thanks for sending me the sample.
Kenton, O., Dec. 2. W. E. SMITH.

We sent a sample also to M. H. Hunt, Bell Branch, Mich., and on receipt of it he writes:

The sample sections are just received, and they are fine—in fact, they are the smoothest yet seen here. The V groove is perfection—no fuzzy edges. I shall order 50 M. in a few days. M. H. HUNT.

We have sent out very few samples as yet, but expect to mail quite a number during the next two or three weeks. We shall be pleased to mail samples to any address, without charge, if you send 2 two-cent stamps to pay the postage. We shall also be pleased to make prices to dealers and others who buy in large quantities, if you will write, naming quantity you can use.

THE NEW EDITION OF OUR POTATO BOOK.

The author, T. B. Terry, seldom gets excited and extravagant; but last spring I received one letter from him that made me smile I am sure he never thought of having it put in print. But a few lines from it, I feel so sure, may do good, I think I will take the chances. Please bear in mind, he would never have written this way if he had had any thought that I would use it here, for he is careful, to a fault, of committing himself. Here it is:

My Dear Mr. Root:—I want you to come out here, if you possibly can, before another storm comes. I want you to see my clover in its glory, before it goes down. I believe the chapter in the potato book, on rotation and clover, can easily be worth 1000 times the cost of the book to many readers, and I want you to *see* what I can show you *now* with your own eyes. T. B. TERRY.
Hudson, Ohio, May 30.

Oh if the farmers of our land would not get led away by any thing more dangerous than growing clover to get their ground in order, what a happy people we should be! I believe it was the very day the above was mailed that I came up with my wheel in the afternoon. I have already told you something about the sight that met my eyes when I caught a glimpse of that clover-field. Every foot of the ground seemed to be holding more clover than it could very well accommodate; and acre after acre was a picture of luxuriant thrifty growth, such as I never saw before. No wonder his great new barn could hardly contain it. The new book tells all about getting such a stand of clover, and without chemical fertilizers or very much stable manure; and I shouldn t wonder a bit if some who buy this book will find it worth—yes, even *one thousand times* ($400) what it costs. Sent free by mail for 40 cents; if sent by freight or express with other goods, 35 cents.

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Do you know that, freight considered, we can furnish you with supplies at a less cost than any house in this country? Freight rates from New York to Jacksonville, Fla., only 35 cts. per 100 lbs. Our circular free upon application.

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Newhall, Los Angeles Co., Cal.

Wants or Exchange Department.

Notices will be inserted under this head at one-half our usual rates. All advertisements intended for this department must not exceed five lines, and you must SAY you want your adv't in this department, or we will not be responsible for errors. You can have the notice as many lines as you please, but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices offering articles for sale, can not be inserted under this head. For such our regular rates of 20 cts. a line will be charged, and they will be put with the regular advertisements. We can not be responsible for dissatisfaction arising from these "swaps."

TO exchange.—Bicycles, 56 inch Champion, 52-in. Eagle. Will exchange either for 120 lbs. of good extracted honey. Send sample. Also several good safeties to exchange. J. A. GREEN, Ottawa, Ill.

WANTED.—To exchange for honey or offers, Toulouse geese, English dorkins, Scotch collies, and ferrets. Fine stock. WYNN SMITH,
Lock Box 235, Aurora, Ill.

WANTED.—To exchange one Columbia Safety bicycle for wax, honey, or offers.
F. H. MCFARLAND, St. Albans, Franklin Co., Vt.

WANTED.—To exchange a 15-jewel Elgin watch, H. H. Taylor's make, valued $20.00, also gold-plated chain, valued at $5.00, for foundation, L. size, beeswax, extracted honey, or combs in L. frames.
JAS. REED, Browntown, Green Co., Wis.

WANTED.—To exchange a self-rake pony reaper, made by the Central Mfg. Co., Lewisburg, Pa., or Italian bees, or hogs. Address
H. P. KETTERING, Greensburg, Westm'd Co., Pa.

WANTED.—20,000 raspberry tips and blackberry sets, in exchange for extracted honey and bee-keepers' supplies. J. B. MURREY, Ada, Ohio.

WANTED.—To exchange 5 or 6 full-blooded Light Brahma cocks (last spring's hatch) for any thing useful. These birds are all fine and first-class, just what you need to improve your poultry.
H. L. VONLIENEN, Somerset, Saline Co., Ill.

Books by T. B. Terry and Others.

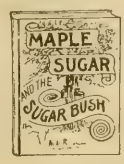
The long winter evenings bring extra time for reading. A part of this time could not be more profitably spent than in reading the following rural hand-books which we send by mail at the uniform price of 40c each.

The A B C of Potato Culture. Paper, 220 pages, 4x5, illustrated. This is T. B. Terry's first and most masterly work. The book has had a large sale, and has been reprinted in foreign languages. The second edition, reset and almost entirely rewritten, is just issued. When we are thoroughly conversant with friend Terry's system of raising potatoes, we shall be ready to handle almost any farm crop successfully. Price 40c, postpaid.

The A B C of Strawberry Culture. Paper, 150 pages, fully illustrated. This is Terry's latest *small* book, and has received some very high words of praise. Who among rural people does not have a little garden-patch? If you would learn to raise in it that most luscious of all fruit, the strawberry, with the best results, you can not be without this little book. Even if you don't grow strawberries you will be the better for reading it.

Tile Drainage. By W. I. Chamberlain. This is a valuable companion to our other rural books. It embraces the experience of forty years of one of our foremost practical agriculturists, who has laid with his own hands over 15 miles of tile. Paper, 150 pages, illustrated. Price 40c, postpaid.

Winter Care of Horses and Cattle. This is friend Terry's second book in regard to farm matters; but it is so intimately connected with his potato book that it reads almost like a sequel to it. If you have only a horse or a cow, I think it will pay you to invest in the book. It has 44 pages, 7x10, illustrated. Price 40c, postpaid.



Maple Sugar and the Sugar-Bush. By A. J. Cook. Paper, 44 pages, 7x10, illustrated. This is most valuable to all who are interested in the product of our sugar maples.. No one who makes maple sugar or syrup should be without it. If you don't make maple syrup you may want to know how it is made, and how to judge of a good article when you buy it. Price 40c, postpaid.

Tomato Culture. In three parts. By J. W. Day, D. Cummins, and A. I. Root. Paper, 150 pages, illustrated. A most valuable treatise embracing field culture, forcing under glass, and raising plants for market. Valuable to any one raising garden stuff of any kind, aside from tomatoes. Price 40c, postpaid.

A B C of Carp Culture. In paper covers, illustrated. This is a work of 70 pages, 7x10, written by Geo. Finley and A. I. Root, and the best authority on the subject of carp culture yet in print. The rearing of carp is a pleasant and profitable amusement. This book will tell you all about it. Price 40c.

Any one of above books sent free for one new subscription with your own renewal and $2.00.

Terry's First Large-Sized Book.

We have just received 100 copies of "Our Farming," from Wm. Henry Maule. Price, by mail, postpaid, $2.00. If ordered by express or freight with other goods, you may deduct the postage, 15c.; or we will send the book by mail, postpaid, with GLEANINGS, for $2.50.

A. I. ROOT, Medina, Ohio.